QUÉBEC'S FOREST RESOURCES AND INDUSTRY

STATISTICAL INFORMATION
1986-1987 EDITION

ERRATA

Page 16: Spruce budworm

The total indicated for Region 04, in 1986, should read **797 002** instead of 737 002;

and the figures for Region 06, in 1985, under the heading «Severe», should read **372 345** instead of 272 345.

Page 23: Volume of wood harvested in Québec according to socio-economic zones

In the «total %» column for 1984-1985, the figures should read **77%** instead of 85%, for Québec Public Forests, and **23%** instead of 15%, for Private Forests.

Page 30: Reforestation in 1984-1985

In Region 02, the total for «white spruce» should read **867** instead of 6 867.

Page 38: Under the heading «Lumber»

The text should read «**Over 50 000 m^3/year**» rather than 50 000 m^3/ha.

Page 39: Productivity of the wood industry

Since the data are expressed in dollars, the third decimal should be disregarded.

Page 44: Financial structure ratio

The average indicated for British Columbia should read **56:44** rather than 66:34.

Pages 44 and 50: Working Capital Ratio

No percent sign should appear in these tables.

Page 46: Pulp and paper mills

There are **11 plants** in Region 04 and not 22. Under the heading «Paperboard», the text should read **1 plant** rather than 2 in Region 05.

Page 52: Economic indicator

The value added to activity A, «Logging», was **407 101** in 1984 and not 47 101.

As a result, the «%» of the forest sector/total economic activity should be **4.1%** in 1984 instead of 3.8%.

QUÉBEC'S FOREST RESOURCES AND INDUSTRY

STATISTICAL INFORMATION
1986-1987 EDITION

DESIGN, RESEARCH AND WRITING
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Direction de la planification, MER
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REMARK:
Unlesss otherwise indicated, data are provided by the administrative unit of the MER which specializes in the subject being dealt with.

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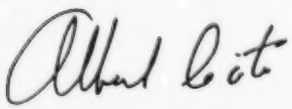
The forests play a major role in the geographical makeup and ecological balance of Québec, as well as in its social and economic development.

Covering the greater part of Québec's territory, the forests have given rise to the province's leading industry in terms of employment, added value and exports. The forest resource also provides the backdrop for a tourist and recreational industry that generates tens of millions of dollars. Finally, the forest tempers our climate, regulates the flow of our rivers and streams, reduces soil erosion and provides an essential habitat for fish and wildlife species.

As we all enjoy the benefits of this renewable natural resource, we must also share the collective responsibility of ensuring its protection, management and use.

After consulting with the industry, the business and academic communities, forestry professionals, and other interest groups, the gouvernement du Québec passed the Forest Act, which introduces a new system of forest management, This system, based on the principles of sustained yield and multiple use of the forest, also takes both economical and ecological requirements into account.

This 1986-1987 statistical document clearly shows the crucial importance of the forest sector for Québec's society. We hope it will enable readers to fully appreciate the value of this irreplaceable lever in Québec's economy.



Albert Côté, For. Eng.
Minister
Responsible for Forests

Québec's Forest Resources and Industry

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1 Geographical Description of Québec's Forests

1.1 Ecological Zones

Area and Location of Québec's Ecological Zones

According to the border set in 1927, which is not definitive, Québec has an area of 1 667 926 km², Labrador excluded.

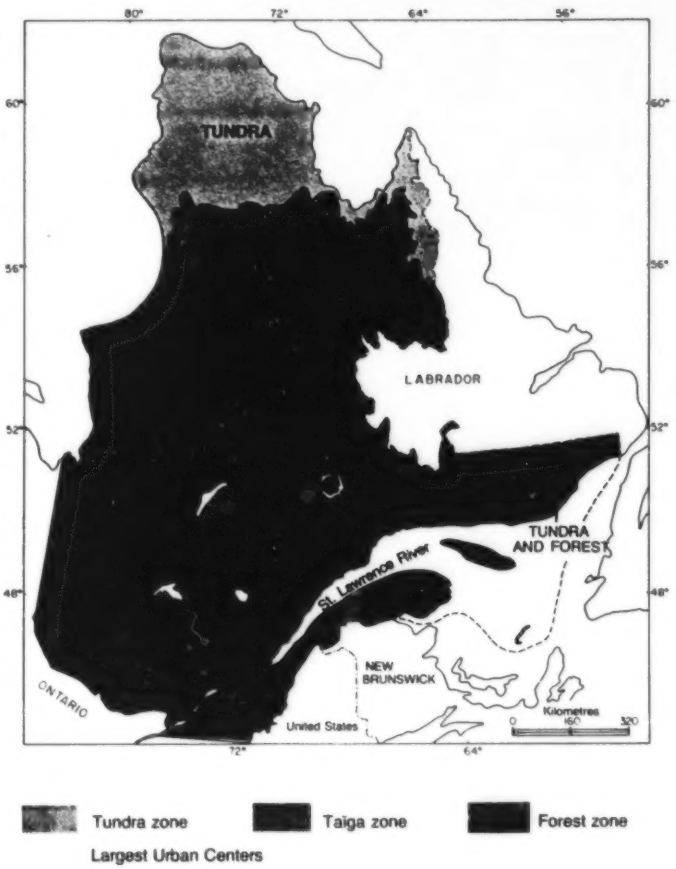
The waters of the St. Lawrence River, the Gulf of St. Lawrence (up to the limit of equidistance from both shores) and the indentations along James Bay, Hudson Bay, Hudson Strait, and Ungava Bay cover 152 693 km², or 9% of Québec's total area.

Québec's land mass is divided into three main ecological zones:

- the TUNDRA, the most northerly zone, is void of trees and consists of swamps and rocky outcrops on which moss, lichens and bushes grow. It has an area of 208 741 km², or 12% of Québec's area;
- the middle zone, called TAÏGA, extends to about the 52nd parallel; it is sparsely wooded and has no commercial potential. It has an area of 527 236 km², or 32% of Québec's total area;
- the most southerly zone, the FOREST, includes all productive forests; it covers the rest of Québec (779 256 km²), or 47% of its area.

The forest inventory established for management purposes is limited to the MER's nine administrative regions. It covers almost the entire Forest zone, including a small strip of Taïga lying between Havre-Saint-Pierre and Blanc-Sablon along the St. Lawrence, and has an area of 764 314 km², or 46% of Québec's area.

Québec's Ecological Zones



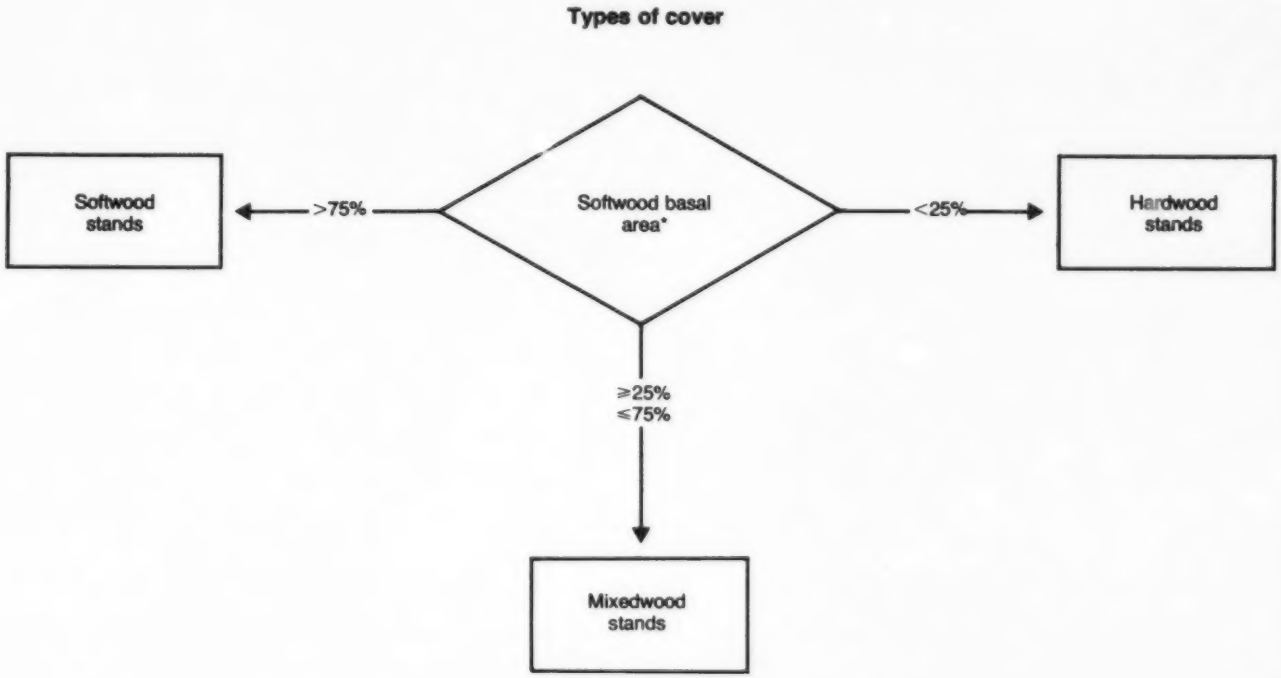
N.B.: The ecological Forest zone and the Commercial forest region, which encompasses all of the MER's administrative regions, are two different entities.

1 Geographical Description of Québec's Forests

1.2 Ecological Subzones and Climax Communities in the Forest Zone

Definitions

The ecological Forest zone is subdivided into the hardwood, mixedwood and softwood subzones, according to the nature and **type of cover** as well as the basal area* occupied by softwood and hardwood species. Various **climax communities** are associated with each subzone; they group together the areas which have the same species or groups of species.



Climax community

The culminating stage in plant succession for a given environment, the vegetation having reached a highly stable condition, is called a climax community.

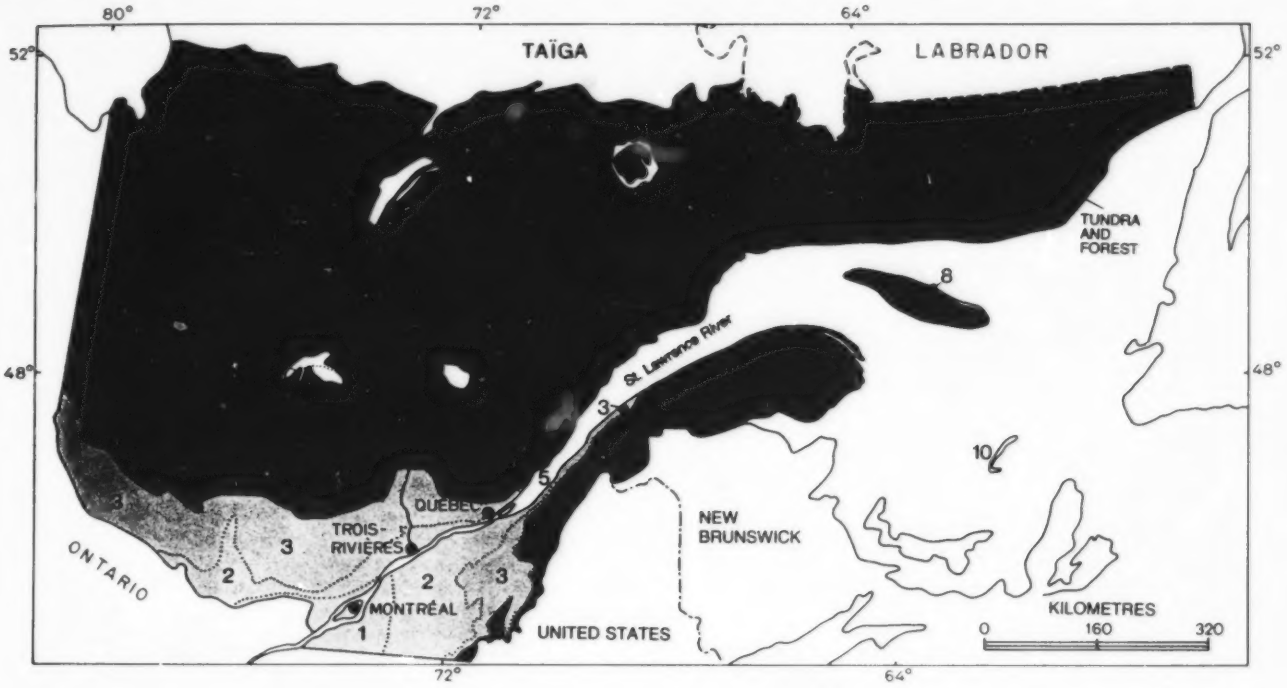
Hardwood forests include three climax communities in which sugar maples are predominant over average sites. Mixedwood forests comprise four of them where balsam fir, yellow birch and sugar maple are the main climax species. In softwood forests, five climax communities are present with black spruce and balsam fir as dominant species.

* Basal area: the area actually occupied by all the stems of a stand (measured on the bark, at 1.30 m above the ground).

1 Geographical Description of Québec's Forests

1.2 Ecological Subzones and Climax Communities in the Forest Zone (continued)

Ecological Subzones and Climax Communities in the Forest Zone



Ecological Subzones

HARDWOOD FOREST

Corresponding climax communities

(1) Sugar maple — hickory forest and sugar maple — basswood forest
(2) Sugar maple — basswood forest and sugar maple — yellow birch forest
(3) Sugar maple — yellow birch forest

MIXEDWOOD FOREST

Corresponding climax communities

(4) Sugar maple — yellow birch forest and yellow birch — balsam fir forest
(5) Balsam fir — yellow birch forest
(6) Yellow birch — balsam fir forest
(7) Balsam fir, white birch and red maple forest

SOFTWOOD FOREST

Corresponding climax communities

(8) Balsam fir — white birch forest
(9) Balsam fir and black or white spruce forest
(10) Balsam fir — white spruce forest
(11) Black spruce and moss forest
(12) Black spruce, balsam fir and moss forest
(13) Tundra

1 Geographical Description of Quebec's Forests

1.3 Administrative Boundaries of the MER

Definitions

Commercial Forest Region
This term is used to designate the overall territory which the MER has subdivided for management purposes.

Administrative Regions and Administrative Units
These are the administrative subdivisions which are determined by the MER and benefit from a regional administration. There are nine administrative regions encompassing 44 administrative units.

Socioeconomic Zones and Management Units
Subdivisions of the territory based on socioeconomic characteristics (four zones)*. The superimposition of both types of divisions (administrative and socioeconomic) divides certain administrative units into smaller territories called management units. In other words, an administrative unit which covers two or three socioeconomic zones includes the same number of management units.

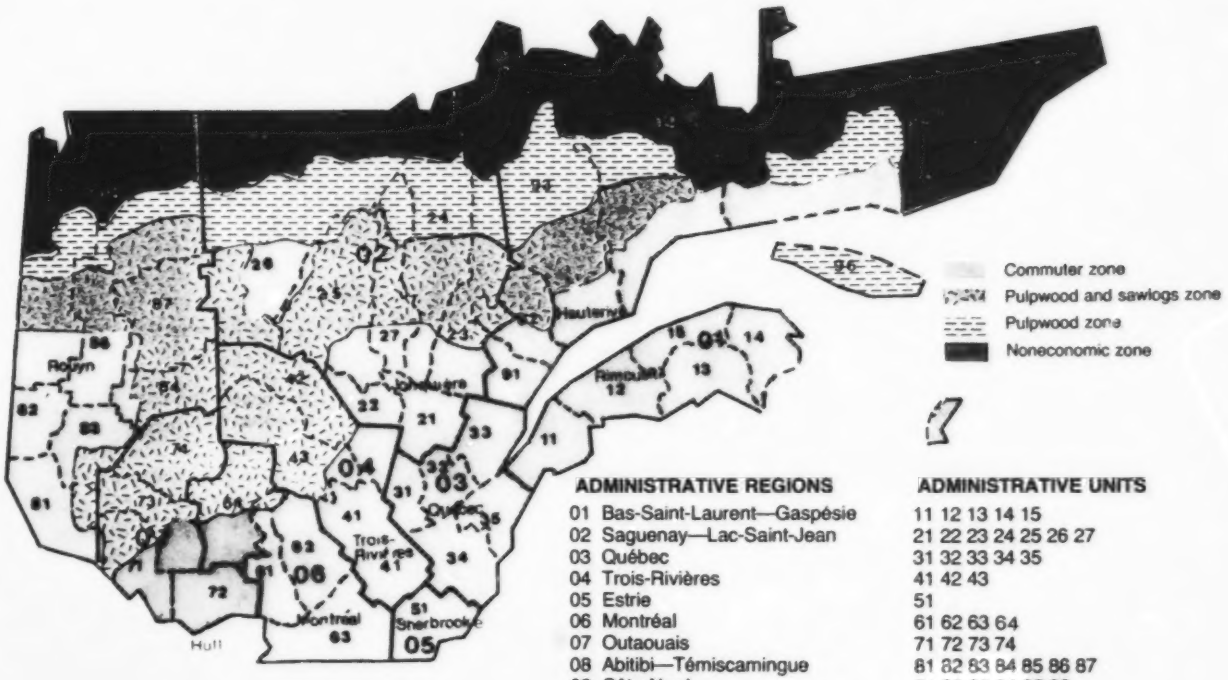
*** Commuter operations zone**
A territory located within a 65-km radius from towns of 5 000 inhabitants or more and which is the preferential source of supply for the forest industry.

*** Pulpwood and sawlogs operations zone**
A territory located more than 65 km away from towns and whose accessible timber may be of interest to sawmills and pulp and paper industries as a secondary source of supply.

*** Pulpwood operations zone**
The part of the commercial forest region which may be of interest to the industry as a tertiary source of supply.

*** Noneconomic zone**
The northern part of the territory which cannot currently be logged economically, but which may have some potential for the future.

Administrative Boundaries of the ministère de l'Énergie et des Ressources



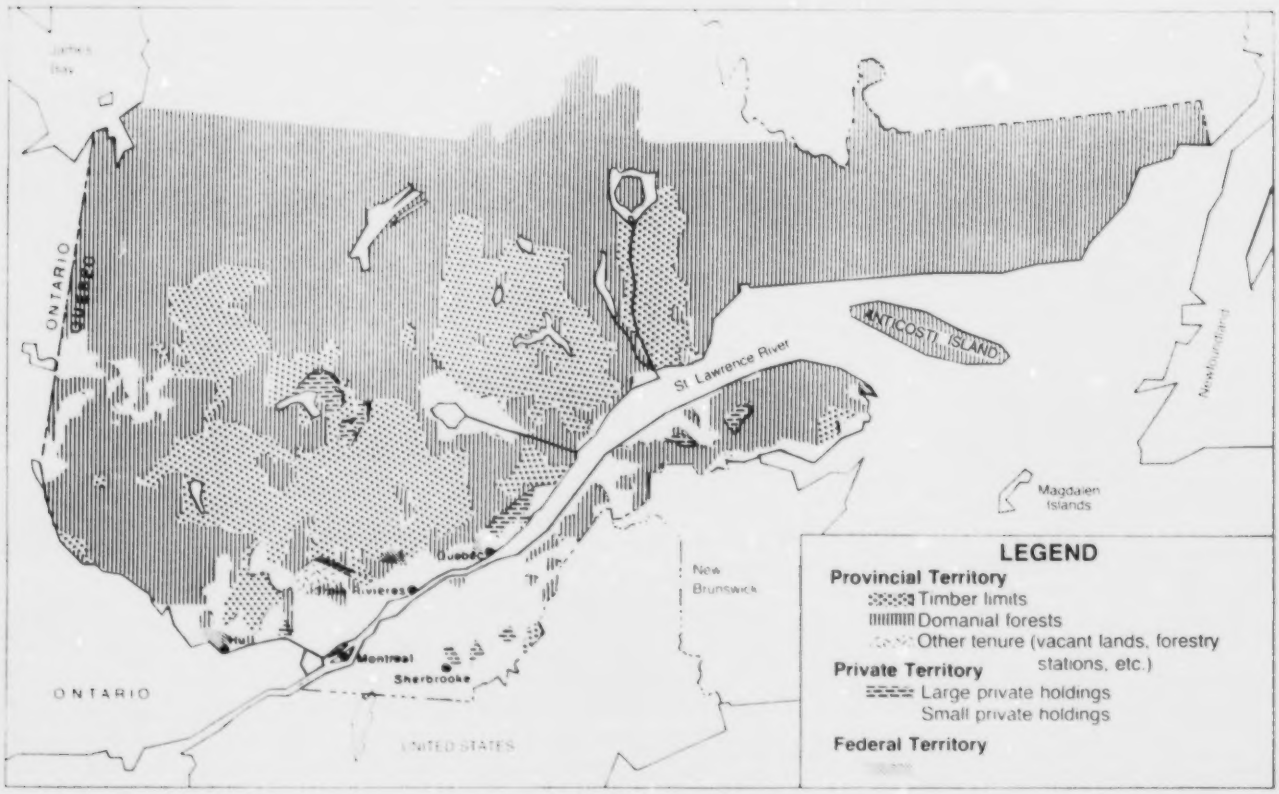
ADMINISTRATIVE REGIONS	ADMINISTRATIVE UNITS
01 Bas-Saint-Laurent—Gaspésie	11 12 13 14 15
02 Saguenay—Lac-Saint-Jean	21 22 23 24 25 26 27
03 Québec	31 32 33 34 35
04 Trois-Rivières	41 42 43
05 Estrie	51
06 Montréal	61 62 63 64
07 Outaouais	71 72 73 74
08 Abitibi—Témiscamingue	81 82 83 84 85 86 87
09 Côte-Nord	91 92 93 94 95 96

Note: This map reflects recent changes in the regional administrative boundaries.

1

1.4 Types of Ownership and Tenure

Types of Ownership and Tenure in the Commercial Forest Region



Area by Types of Ownership and Tenure

	The MER's Administrative Regions									TOTAL
	01	02	03	04	05	06	07	08	09	
	km²	km²	km²	km²	km²	km²	km²	km²	km²	km²
Provincial Territory	**27 470**	**159 885**	**12 461**	**36 639**	**598**	**9 387**	**46 510**	**127 431**	**228 637**	**649 018**
Timber Limits*	1 729	42 437	5 718	24 927	28	4 533	24 261	19 449	25 195	148 277
Domanial Forest	23 819	110 442	6 058	7 176	555	2 766	21 730	105 598	182 275	460 419
Other Tenure (vacant lands, forestry stations, etc.)	1 922	7 006	685	4 536	15	2 088	519	2 384	21 167	40 322
Private Territory	**15 371**	**6 143**	**21 578**	**14 101**	**12 829**	**18 366**	**10 556**	**11 780**	**1 924**	**112 648**
Large holdings**	1 291	500	2 567	4 277	990	43	447	506	928	11 549
Small holdings	14 080	5 643	19 011	9 824	11 839	18 323	10 109	11 274	996	101 099
Federal Territory	**277**	**52**	**243**	**590**	**—**	**214**	**473**	**519**	**280**	**2 648**
Total	**43 118**	**166 080**	**34 282**	**51 330**	**13 427**	**27 967**	**57 539**	**139 730**	**230 841**	**764 314**

* There are currently 34 timber limits

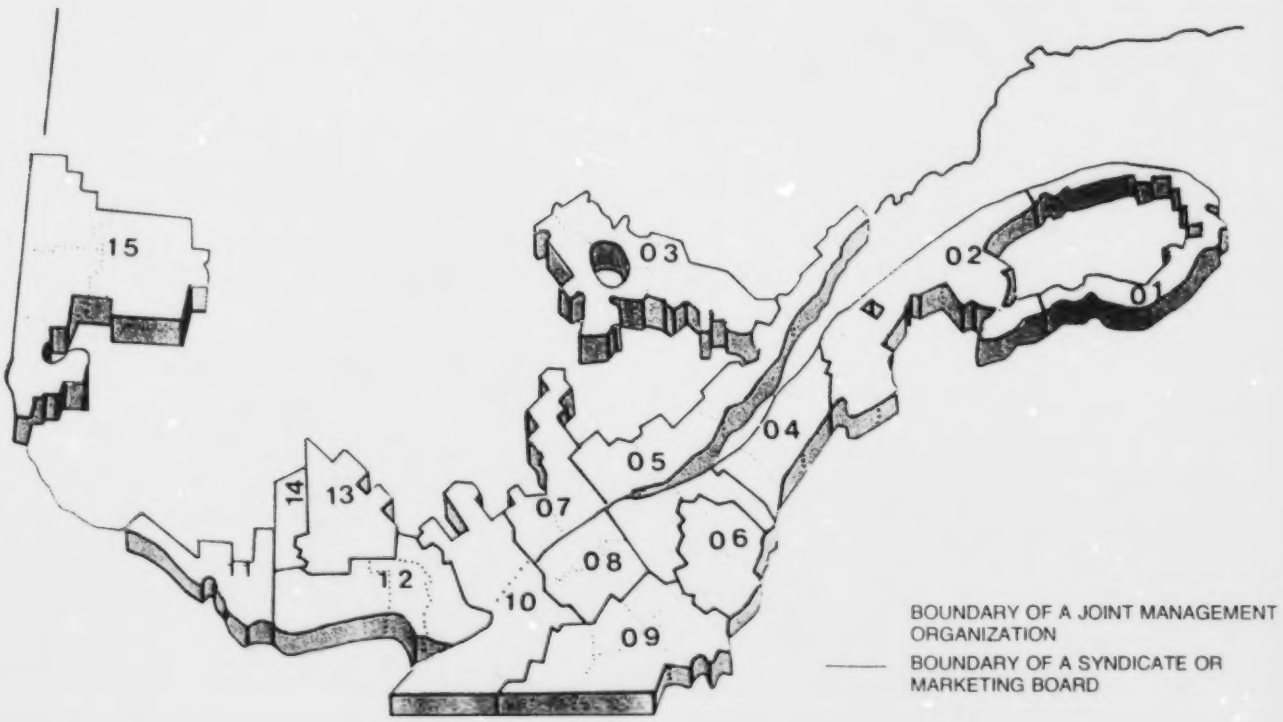
** More than 800 hectares in a single block

Note: For regions 7 and 8, this table provides data that were revised following the latest ten-year inventory. (Data for the other regions are currently under revision.)

1 Geographical Description of Québec's Forests

1.5 Administrative Boundaries of Private Forests

Boundaries of Areas Served by Syndicates, Marketing Boards and Joint Management Organizations



Syndicates, Marketing Boards and Joint Management Organizations

SYNDICATES OR MARKETING BOARDS	JOINT MANAGEMENT		
	Groups or companies (number)	Areas covered by agreements* (hectares)	Owners involved* (number)
01. Syndicat des producteurs de bois de la Gaspésie	4	52 744	767
02. Syndicat des producteurs de bois du Bas-Saint-Laurent	9	174 824	2 606
03. Syndicat des producteurs de bois du Saguenay — Lac-Saint-Jean	3	53 591	937
04. Office des producteurs de bois de Sainte-Anne-de-la-Pocatière	3	18 090	353
05. Office des producteurs de bois de la région de Québec	5	32 156	705
06. Syndicat des producteurs de bois de la Beauce	3	37 510	1 051
07. Syndicat des producteurs de bois de la Mauricie	2	14 848	306
08. Syndicat des producteurs de bois de Nicolet	2	16 907	420
09. Syndicat des producteurs de bois de l'Estrie	5	43 163	809
10. Syndicat des producteurs de bois de Montréal	1	1 164	30
11. Office des producteurs de bois de Pontiac	1	1 450	20
12. Syndicat des producteurs de bois des Laurentides	1	2 562	52
13. Syndicat des producteurs de bois du comté de Labelle	1	12 800	260
14. Office des producteurs de bois de la Gatineau	1	7 645	115
15. Syndicat des producteurs de bois de l'Abitibi — Témiscamingue	4	51 216	991
Total	**45**	**520 670**	**9 422**

Source: Fédération des producteurs de bois du Québec

* Valid as of March 31, 1986

1 Geographical Description of Québec's Forests

1.6 Forest Cooperatives

Québec Forest Cooperatives
A) Distribution

	The MER's Administrative Regions										
	01	02	03	04	05	06	07	08	09	Prov.	Total
Number of cooperatives	13	14	8	2	1	4	2	19	7	1	71
Number of cooperatives in operation	9	11	4	2	1	3	2	14	5	1	52
Number of regional and provincial organizations											4
Number of members											4 000*
Number of workers											3 000*
Duration of operations											month/year 7.5 to 8
Total sales											120* $ millions

* Approximation

B) Sectors of Activity

Québec forest cooperatives are involved in:
1 – Logging
2 – Forest management
3 – Seedling production
4 – Processing

C) Assessment of Achievements

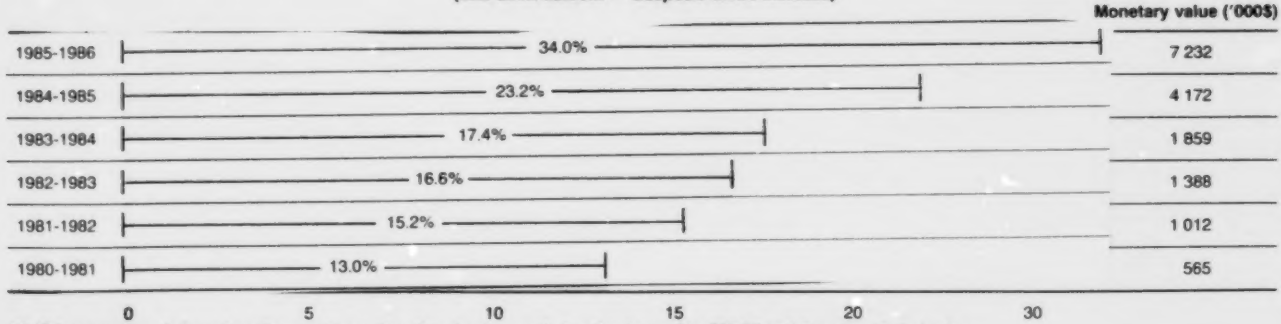
1 – Logging

Estimate of the volumes logged by the cooperatives between 1970 and 1985.

	1970	1975	1980	1985
Harvest (solid m³)	1 071 326	1 427 933	1 572 430	2 501 091

2 – Forest Management

Share of forest cooperatives in overall management activities (%)[1] (Bas-Saint-Laurent — Gaspésie JMOs included)



(1) This percentage is based on the monetary value of contracts awarded under decree No. 580-85 and through calls to tender.

3 – Seedling Production

In 1985-1986, eight cooperatives were awarded MER contracts for the annual production of 36 million hothouse and tunnel-grown seedlings.

4 – Processing

Only 11 cooperatives are full or part owners of wood fiber processing mills. With eight mills between them, these cooperatives process approximately 229 million bfm, for total sales in the region of $70 million.

2 Inventory of Commercial Forests

2.1 Area

Area *(km²)*
A) By Socioeconomic Zone

	ZONES								TOTAL	
	Commuter		Pulpwood-Sawlogs		Pulpwood		Noneconomic			
	km²	%	km²	%	km²	%	km²	%	km²	%
Total Area	**292 261**	**100**	**197 224**	**100**	**92 629**	**100**	**182 200**	**100**	**764 314**	**100**
Water	19 561	7	21 091	11	13 394	14	19 682	11	73 728	10
Non-forest lands	37 122	13	198	—	27	—	180	—	37 527	5
Unproductive forest lands	19 734	7	19 639	10	12 470	13	45 231	25	97 074	13
Inaccessible productive forest lands[1]	4 574	2	1 315	1	721	1	438	—	7 048	1
Accessible productive forest lands[2]	*211 270*	*72*	*154 981*	*79*	*66 017*	*71*	*116 669*	*64*	*548 937*	*72*
Mature[3]	78 434	37	88 575	57	45 240	69	78 985	68	291 234	53
Immature	83 978	40	38 341	25	8 507	13	6 931	6	137 757	25
Regenerated	31 402	15	17 800	11	7 268	11	10 907	9	67 377	12
Regenerating	17 456	8	10 265	7	5 002	8	19 846	17	52 569	10
Federal Public Lands	**1 992**	**1**	**156**	**—**	**—**	**—**	**500**	**—**	**2 648**	**—**
Water	158	8	17	11	—	—	9	2	184	7
Non-forest lands	118	6	1	1	—	—	—	—	119	4
Unproductive forest lands	94	5	2	1	—	—	190	38	286	11
Inaccessible productive forest lands[1]	38	2	—	—	—	—	—	—	38	1
Accessible productive forest lands[2]	*1 584*	*80*	*136*	*87*	—	—	*301*	*60*	*2 021*	*76*
Mature[3]	644	41	37	27	—	—	229	76	910	45
Immature	724	46	85	63	—	—	—	—	809	40
Regenerated	149	9	5	4	—	—	—	—	154	8
Regenerating	67	4	9	7	—	—	72	24	148	7
Québec Public Lands[4]	**187 309**	**64**	**191 891**	**97**	**92 629**	**100**	**177 189**	**97**	**649 018**	**85**
Water	14 549	8	20 528	11	13 394	14	19 479	11	67 950	10
Non-forest lands	741	—	179	—	27	—	176	—	1 123	—
Unproductive forest lands	16 477	9	19 327	10	12 470	13	43 206	24	91 480	14
Inaccessible productive forest lands[1]	3 303	2	1 276	1	721	1	438	—	5 738	1
Accessible productive forest lands[2]	*152 239*	*81*	*150 581*	*78*	*66 017*	*71*	*113 890*	*64*	*482 727*	*74*
Mature[3]	69 203	45	86 852	57	45 240	69	76 867	67	278 162	58
Immature	49 331	32	37 205	24	8 507	13	6 929	6	101 972	21
Regenerated	21 504	14	16 653	11	7 268	11	10 907	10	56 332	12
Regenerating	12 201	8	9 871	6	5 002	8	19 187	17	46 261	10
Private Lands	**102 960**	**35**	**5 177**	**3**	**—**	**—**	**4 511**	**2**	**112 648**	**15**
Water	4 854	5	546	11	—	—	194	4	5 594	5
Non-forest lands	36 263	35	18	—	—	—	4	—	36 285	32
Unproductive forest lands	3 163	3	310	6	—	—	1 835	41	5 308	5
Inaccessible productive forest lands[1]	1 233	1	39	1	—	—	—	—	1 272	1
Accessible productive forest lands[2]	*57 447*	*56*	*4 264*	*82*	—	—	*2 478*	*55*	*64 189*	*57*
Mature[3]	8 587	15	1 686	40	—	—	1 889	76	12 162	19
Immature	33 923	59	1 051	25	—	—	2	—	34 976	54
Regenerated	9 749	17	1 142	27	—	—	—	—	10 891	17
Regenerating	5 188	9	385	9	—	—	587	24	6 160	10

(1) Inaccessible productive forest lands: lands with a slope superior to 50%.

(2) Accessible productive forest lands: lands with a slope inferior to 50%

(3) Stages of development of stands (mature, immature, regenerated or regenerating). These stages correspond to periods in the growth cycle of a forest stand. The end of these periods has been established according to the net growth rate of the stand. A stand may include stems large enough for logging and be identified as immature if it is still increasing. On the other hand, another stand composed of smaller stems than the previous one might be considered ready for logging if its net growth rate is declining. Consequently, development stages do not correspond to fixed periods of time for all stands, they are related to the net growth rate which depends on the group of species, the quality of the station, climatic conditions and drainage.

(4) These figures do not entirely take into account transfers in ownership ratified by the James Bay and Northern Québec Agreement. Thus, they are slightly over-valued in the pulpwood and noneconomic zones, to the detriment of federal and private lands.

2 Inventory of Commercial Forests

2.1 Area (continued)

B) By the MER's Administrative Regions

	TOTAL AREA				ACCESSIBLE PRODUCTIVE FOREST LANDS			
	Federal km²	Quebec km²	Private km²	Total km²	Federal km²	Quebec km²	Private km²	Total km²
01 Bas-Saint-Laurent—Gaspésie	277	27 470	15 371	43 118	252	24 873	10 548	35 673
02 Saguenay—Lac-Saint-Jean	52	159 885	6 143	166 080	31	125 343	3 333	128 707
03 Québec	243	12 461	21 578	34 282	202	11 029	12 984	24 215
04 Trois-Rivières	590	36 639	14 101	51 330	509	30 328	7 810	38 647
05 Estrie	—	598	12 829	13 427	—	566	7 482	8 048
06 Montréal	214	9 387	18 366	27 967	85	8 172	6 927	15 184
07 Outaouais	473	46 519	10 556	57 539	387	38 862	7 287	46 536
08 Abitibi-Témiscamingue	519	127 431	11 780	139 730	315	87 115	6 483	93 913
09 Côte-Nord	280	228 637	1 924	230 841	240	156 439	1 335	158 014
Total	**2 648**	**649 018**	**112 648**	**764 314**	**2 021**	**482 727**	**64 189**	**548 937**

C) By Tenure *(Québec Public Lands)*

	Total Area		Accessible productive forest lands		Accessible productive forest lands total area
	km²	%	km²	%	
Timber limits	148 277	22.8	121 550	25.2	82.0
Domanial forests	460 419	70.9	332 664	68.9	72.3
Other tenures	40 322	6.2	28 513	5.9	70.7
Total	**649 018**	**100.0**	**482 727**	**100.0**	**74.4**

Note: For regions 7 and 8, the above tables provide data that were revised following the latest ten-year inventory.

2 Inventory of Commercial Forests

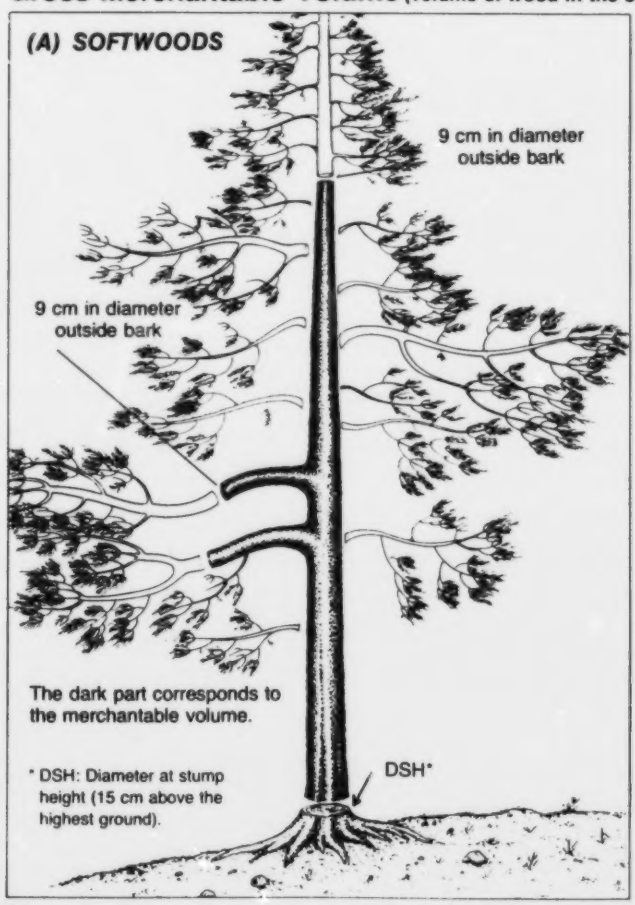
2.2 Gross Merchantable Volume

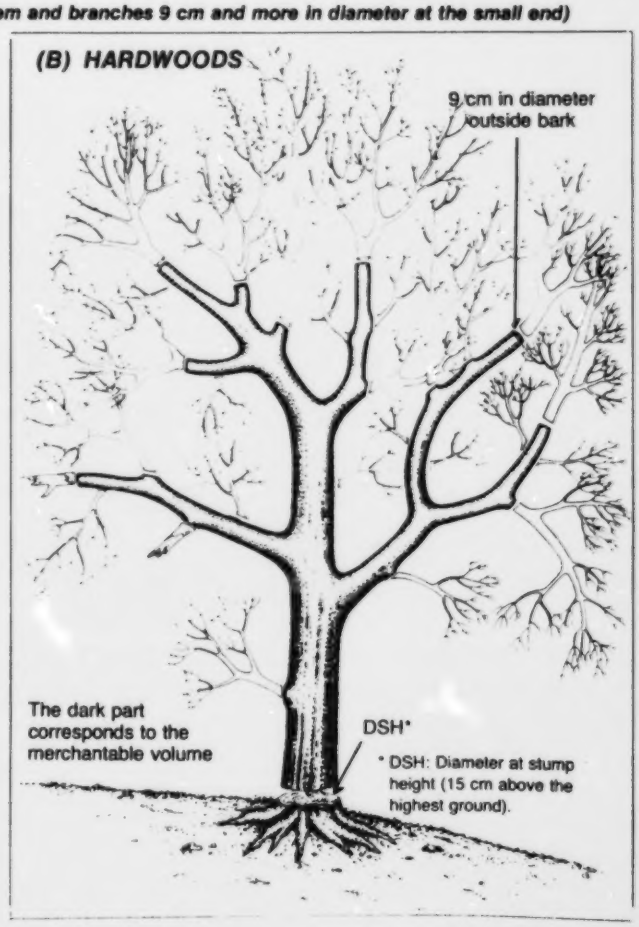
Gross Merchantable Volume of Accessible Productive Zone*

A) By Socioeconomic Zone

	ZONES								TOTAL	
	Commuter		Pulpwood-Sawlogs		Pulpwood		Noneconomic			
	'000m³	%	'000m³	%	'000m³	%	'000m³	%	'000m³	%
All Forests	**1 870 546**	**45**	**1 335 676**	**32**	**503 251**	**12**	**459 845**	**11**	**4 169 318**	**100**
Mature	1 004 932	54	1 009 199	76	439 631	87	418 526	91	2 872 288	69
Immature	785 013	42	282 284	21	49 201	10	29 255	6	1 145 753	27
Regenerated	80 601	4	44 193	3	14 419	3	12 064	3	151 277	4
Québec Public Forests	**1 421 610**	**76**	**1 303 918**	**98**	**503 251**	**100**	**454 311**	**99**	**3 683 090**	**88**
Mature	880 104	62	988 626	76	439 631	87	413 001	91	2 721 362	74
Immature	480 213	34	274 361	21	49 201	10	29 246	6	833 021	23
Regenerated	61 293	4	40 931	3	14 419	3	12 064	3	128 707	3
Private Forests	**432 669**	**23**	**31 758**	**2**	**—**	**—**	**5 010**	**1**	**469 437**	**11**
Mature	115 991	27	20 573	65	—	—	5 001	100	141 565	30
Immature	297 843	69	7 923	25	—	—	9	—	305 775	65
Regenerated	18 835	4	3 262	10	—	—	—	—	22 097	5
Federal Public Forests	**16 267**	**1**	**—**	**—**	**—**	**—**	**524**	**—**	**16 791**	**—**
Mature	8 837	54	—	—	—	—	524	100	9 361	56
Immature	6 957	43	—	—	—	—	—	—	6 957	41
Regenerated	473	3	—	—	—	—	—	—	473	3

Gross Merchantable Volume *(volume of wood in the stem and branches 9 cm and more in diameter at the small end)*


(A) SOFTWOODS
9 cm in diameter outside bark
9 cm in diameter outside bark
The dark part corresponds to the merchantable volume.
DSH*
* DSH: Diameter at stump height (15 cm above the highest ground).

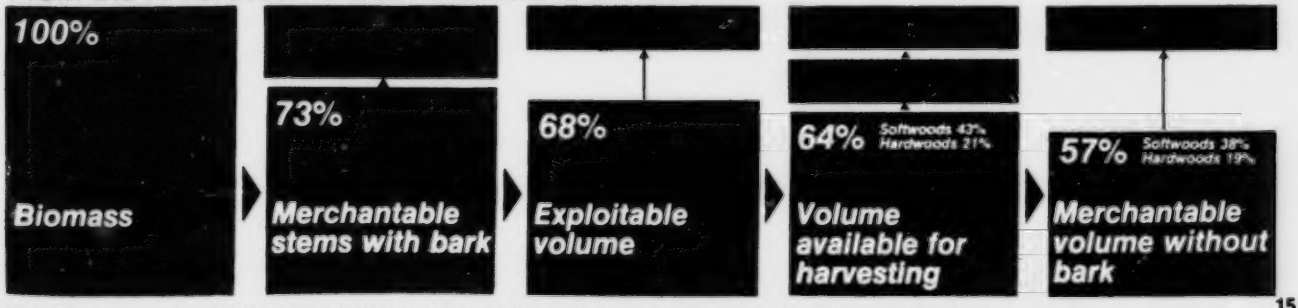

(B) HARDWOODS
9 cm in diameter outside bark
The dark part corresponds to the merchantable volume
DSH*
* DSH: Diameter at stump height (15 cm above the highest ground).

2.2 Gross Merchantable Volume (continued)

B) By the MER's Administrative Regions and by Species

ADMINISTRATIVE REGIONS OF THE MER AND OWNERSHIP	SOFTWOODS					HARDWOODS						TOTAL
	Balsam fir	Spruce	Jack pine	Others	Sub-total	White birch	Yellow birch	Poplars	Maples	Others	Sub-total	
	%	%	%	%	%	%	%	%	%	%	%	'000m³
01—Bas-Saint-Laurent—Gaspésie	**54.5**	**20.3**	**0.1**	**5.6**	**80.5**	**4.9**	**2.5**	**7.1**	**4.5**	**0.6**	**19.5**	**309 242**
Federal Public Forests	46.3	20.1	—	5.9	72.3	9.2	1.6	10.9	5.7	0.2	27.7	1 832
Québec Public Forests	58.3	21.8	0.1	4.7	84.9	4.5	2.3	4.5	3.3	0.5	15.1	237 029
Private Forests	42.0	15.4	—	8.5	65.9	6.2	3.0	15.6	8.3	1.0	34.1	70 381
02—Saguenay—Lac-Saint-Jean	**15.8**	**62.7**	**6.6**	**0.3**	**85.4**	**9.1**	**0.3**	**5.1**	**—**	**—**	**14.6**	**880 584**
Federal Public Forests	10.8	68.2	2.4	0.3	81.7	10.5	0.3	7.5	—	—	18.3	295
Québec Public Forests	15.7	63.5	6.6	0.2	86.0	9.1	0.3	4.6	—	—	14.0	864 538
Private Forests	20.9	18.6	6.7	3.6	49.8	11.6	1.6	34.1	2.2	0.7	50.2	15 751
03—Québec	**36.9**	**19.6**	**0.3**	**3.7**	**60.5**	**9.0**	**7.6**	**4.8**	**15.5**	**2.6**	**39.5**	**192 862**
Federal Public Forests	20.3	6.4	—	1.4	28.1	3.3	20.5	2.3	29.0	16.8	71.9	1 812
Québec Public Forests	44.5	28.4	0.3	1.6	74.8	10.9	7.1	3.7	2.9	0.6	25.2	94 456
Private Forests	29.8	11.2	0.4	5.7	47.1	7.3	7.9	5.9	27.5	4.3	52.9	96 594
04—Trois-Rivières	**16.0**	**29.9**	**11.4**	**3.1**	**60.4**	**14.4**	**5.9**	**10.4**	**7.0**	**1.9**	**39.6**	**320 288**
Federal Public Forests	16.5	17.7	1.3	9.5	45.0	8.5	16.7	5.9	18.4	5.5	55.0	6 089
Québec Public Forests	15.6	31.9	13.3	2.4	63.2	15.8	5.5	11.1	3.7	0.7	36.8	260 340
Private Forests	18.1	21.4	3.6	5.8	48.9	8.3	6.6	7.5	21.4	7.3	51.1	53 859
05—Estrie	**13.6**	**7.1**	**—**	**10.5**	**31.2**	**2.9**	**8.4**	**5.9**	**41.7**	**9.9**	**68.8**	**62 232**
Federal Public Forests	—	—	—	—	—	—	—	—	—	—	—	—
Québec Public Forests	25.5	10.5	—	5.0	41.0	6.8	16.1	7.0	25.9	3.2	59.0	6 902
Private Forests	12.1	6.7	—	11.2	30.0	2.4	7.4	5.8	43.7	10.7	70.0	55 330
06—Montréal	**16.3**	**10.9**	**1.3**	**9.7**	**38.1**	**8.6**	**10.9**	**9.2**	**26.1**	**7.0**	**61.9**	**149 337**
Federal Public Forests	12.8	5.3	—	14.3	32.4	4.0	7.1	5.6	39.0	11.9	67.6	959
Québec Public Forests	20.7	15.7	2.1	6.3	44.8	10.7	14.8	9.6	17.4	2.7	55.2	87 803
Private Forests	9.9	4.1	0.1	14.5	28.6	5.6	5.3	8.7	38.6	13.2	71.4	60 575
07—Outaouais	**5.4**	**12.2**	**1.8**	**14.4**	**33.7**	**13.1**	**11.9**	**10.5**	**22.0**	**8.7**	**65.3**	**513 725**
Federal Public Forests	7.1	4.5	0.7	13.7	26.0	3.6	3.5	10.8	26.7	29.3	74.0	3 842
Québec Public Forests	4.9	13.8	2.0	14.2	34.9	14.8	13.3	9.3	20.9	6.9	65.1	427 169
Private Forests	7.9	4.5	0.6	15.3	28.3	5.1	5.2	17.0	27.1	17.3	71.7	82 714
08—Abitibi-Témiscamingue	**6.1**	**49.4**	**10.3**	**5.5**	**71.3**	**9.3**	**3.3**	**12.5**	**3.0**	**0.6**	**28.7**	**708 556**
Federal Public Forests	1.0	86.7	2.2	0.7	90.6	3.0	—	5.9	0.5	—	9.4	406
Québec Public Forests	6.0	50.2	10.5	5.6	72.3	9.3	3.4	11.3	3.1	0.6	27.7	682 434
Private Forests	7.0	29.4	4.9	2.3	43.6	10.3	0.2	45.5	0.4	0.1	56.4	25 716
09—Côte-Nord	**30.4**	**61.1**	**0.7**	**0.4**	**92.7**	**5.3**	**—**	**2.0**	**—**	**—**	**7.3**	**1 032 491**
Federal Public Forests	50.0	32.8	2.0	2.1	86.9	5.8	0.5	6.3	0.4	0.1	13.1	1 556
Québec Public Forests	30.4	61.3	0.7	0.4	92.8	5.3	—	1.9	—	—	7.2	1 022 418
Private Forests	31.7	41.5	4.5	1.4	79.1	8.8	0.1	11.4	0.6	—	20.9	8 517
Total: Commercial Forests	**20.3**	**43.5**	**4.5**	**4.2**	**72.5**	**8.7**	**3.6**	**7.0**	**6.4**	**1.9**	**27.5**	**4 169 318**
Federal Public Forests	20.4	17.0	0.9	8.4	46.7	6.3	9.7	7.2	18.8	11.2	53.3	16 791
Québec Public Forests	20.3	47.6	4.9	3.5	76.4	9.0	3.3	6.2	4.0	1.1	23.6	3 683 090
Private Forests	20.3	12.2	1.2	9.3	42.9	6.4	5.4	13.1	24.4	7.9	57.1	469 437

From the Arborescent Forest Biomass to the Mill



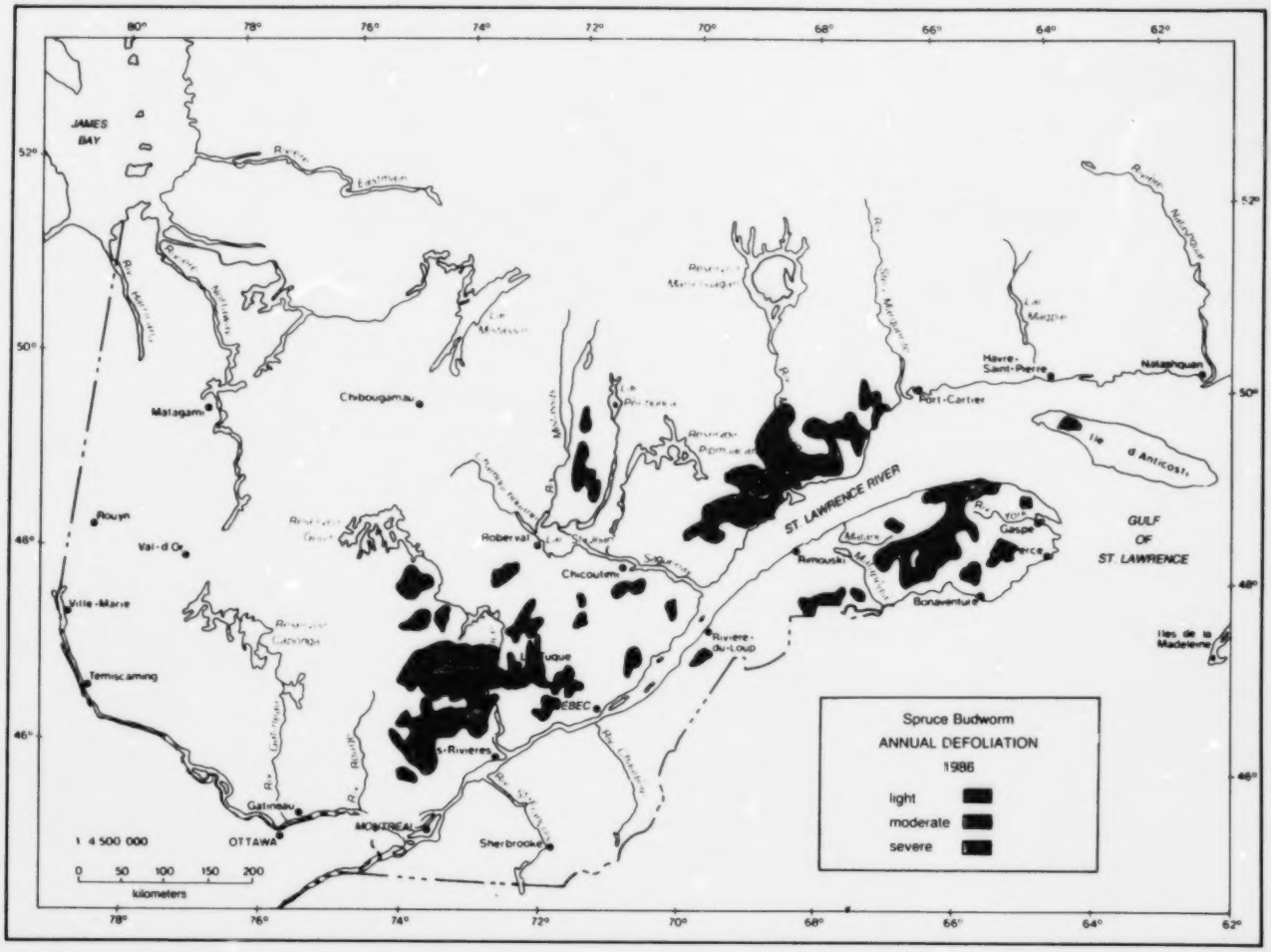
Note: For regions 7 and 8, the above tables provide data that were revised following the latest ten-year inventory.

3 Forest Protection

3.1 Spruce Budworm

Degree of Infestation

Measured in Terms of Defoliation



Areas Affected*

	CLASSES OF DEFOLIATION[1] (hectares)							
	1985				1986			
	Light	Moderate	Severe	Total	Light	Moderate	Severe	Total
01 Bas-Saint-Laurent—Gaspésie	953 128	325 740	275 552	1 554 420	315 314	322 032	56 094	633 440
02 Saguenay—Lac-Saint-Jean	727 451	70 503	1 196 307	1 994 261	26 662	32 656	13 282	72 600
03 Québec	958 596	121 209	575 132	1 654 937	36 721	100 782	41 095	178 598
04 Trois-Rivières	58 907	186 876	2 031 564	2 277 347	274 208	440 980	81 814	737 002
05 Estrie	2 813	—	—	2 813	—	—	—	—
06 Montréal	16 875	13 594	272 345	402 814	43 281	255 626	35 313	334 220
07 Outaouais	100 626	37 344	51 250	189 220	—	—	—	—
08 Abitibi—Témiscamingue	1 407	21 251	10 313	32 971	—	—	—	—
09 Côte-Nord	149 036	37 732	964 265	1 151 033	55 558	199 694	500 835	756 087
Total (Commercial Forests)	**2 968 839**	**814 249**	**5 476 728**	**9 259 816**	**751 744**	**1 351 770**	**728 433**	**2 831 947**

(1) Defoliation means the lost foliage noted on annual growth: light (1% - 35%); moderate (35% - 70%); severe (70% - 100%).

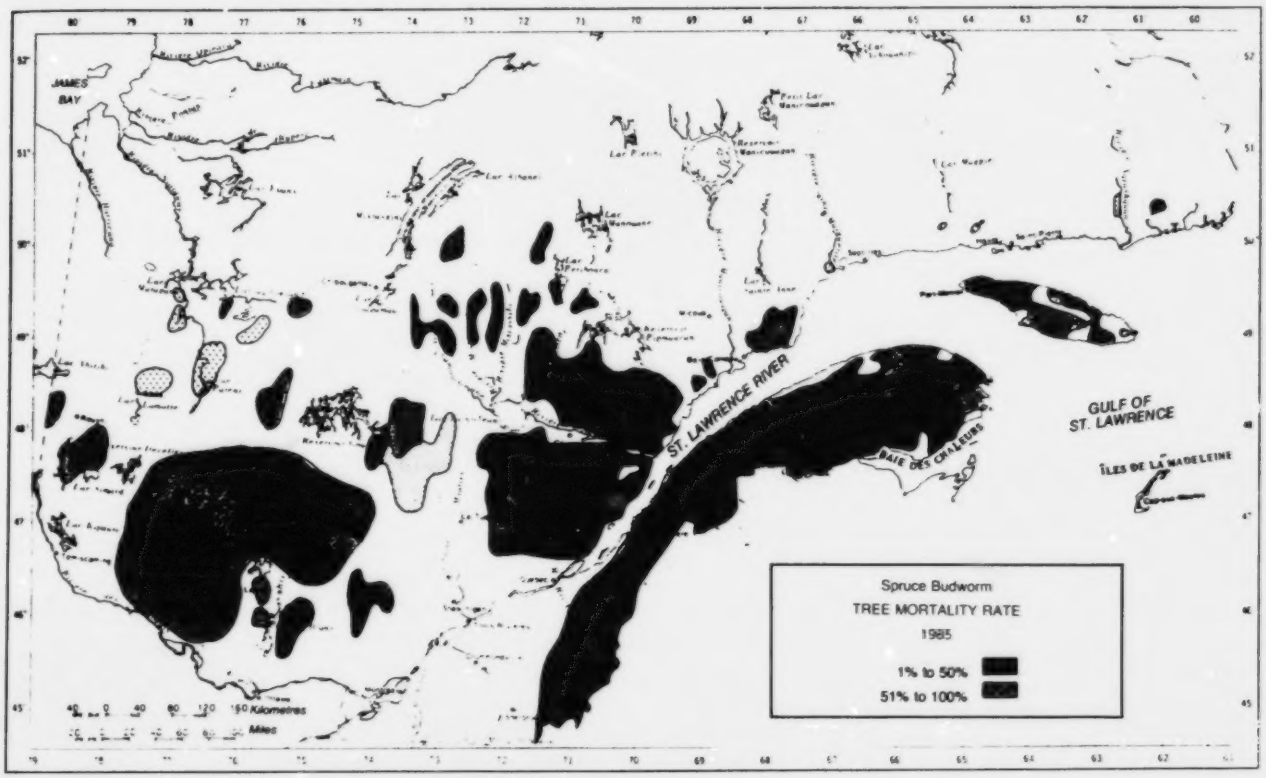
* Areas affected by the spruce budworm, *Choristoneura fumiferana (Clem.)*, in 1985 and 1986.

3 Forest Protection

3.1 Spruce Budworm (continued)

Degree of Infestation

Measured in Terms of Mortality



Areas Affected*

	CLASSES OF MORTALITY[1] (hectares)				
	1 – 25%	26 – 50%	51 – 75%	76 – 100%	Total
01 Bas-Saint-Laurent—Gaspésie	1 482 357	364 126	99 218	707	1 946 408
02 Saguenay—Lac-Saint-Jean	1 256 274	484 495	96 189	2 500	1 839 458
03 Québec	945 492	425 467	75 479	—	1 446 438
04 Trois-Rivières	463 595	205 469	160 313	27 970	857 347
05 Estrie	53 875	19 649	156	—	73 680
06 Montréal	207 302	11 582	469	—	219 353
07 Outaouais	473 594	259 844	85 063	2 897 816	3 716 317
08 Abitibi—Témiscamingue	182 346	238 599	333 751	881 877	1 636 573
09 Côte-Nord	776 786	236 796	60 664	53 194	1 127 440
Total (Commercial Forests)	**5 841 621**	**2 246 027**	**911 302**	**3 864 064**	**12 863 014**

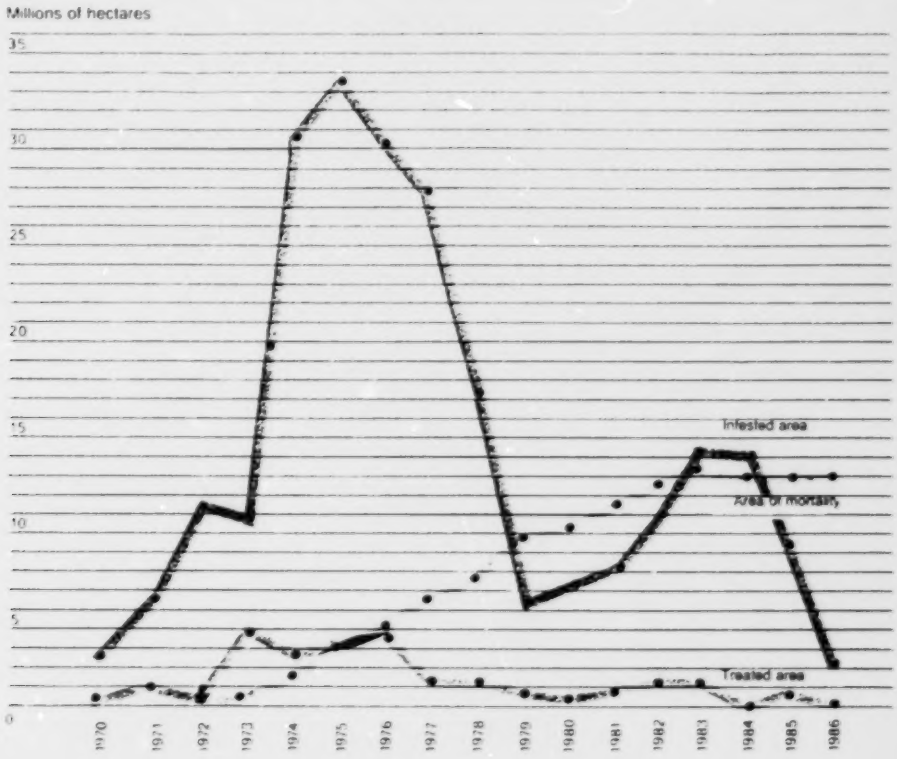
(1) Mortality rates indicate the percentage of dead trees per stand (classifications of 25%).

* Areas affected by the spruce budworm, *Choristoneura fumiferana (Clem.)*, in 1985.

3 Forest Protection

3.1 Spruce Budworm (continued)

Evolution of the Spruce Budworm Infestation



Areas Treated Against the Spruce Budworm

	1981	1982	1983	1984	1985	1986
Areas treated (1 000 hectares)						
Chemical treatment	690	1 267	1 208	384	184	33
Biological treatment	15	32	46	324	482	18
Total area treated	705	1 299	1 254	708	667	51
Cost of the program *(in current dollars)*	**6 970 000**	**10 982 000**	**14 497 000**	**16 753 900**	**19 777 700**	**1 649 700**
Average cost/ha chemically treated	9.43	8.15	10.98	18.88	22.69	—
Average cost/ha biologically treated	31.13	20.52	26.85	29.30	32.22	—
Average weighted cost/ha	9.88	8.46	11.56	23.65	29.63	32.25

Logging on Public Forest Lands Affected by the Spruce Budworm and Cost of Incentives *(Reduction in Stumpage Dues)* for the Government

	PULPWOOD				SAWLOGS AND OTHERS			
	1984-1985		1985-1986		1984-1985		1985-1986	
	Volume (m^3)	Reduction ($)	Volume (m^3)	Reduction ($)	Volume (m^3)	Reduction ($)	Volume (m^3)	Reduction ($)
01 Bas-Saint-Laurent — Gaspésie	563 538	620 101	477 410	392 623	1 358 047	1 589 043	1 641 180	1 772 650
02 Saguenay — Lac-Saint-Jean	404 233	385 746	356 198	418 216	574 737	336 017	629 838	466 098
03 Québec	504 250	836 250	436 600	892 847	355 015	468 286	518 646	659 317
04 Trois-Rivières	109 298	86 345	295 154	187 108	—	—	84 234	35 368
05 Estrie	—	—	2 646	1 905	—	—	4 734	3 408
06 Montréal	112 522	119 893	97 927	103 375	40 971	18 756	113 138	49 820
07 Outaouais	—	—	—	—	—	—	—	—
08 Abitibi — Témiscamingue	—	—	—	—	60 406	23 061	29 000	8 310
09 Côte-Nord	127 968	112 645	123 683	192 712	58 821	33 586	185 771	57 158
Total	**1 821 809**	**2 160 980**	**1 789 609**	**2 188 786**	**2 447 997**	**2 468 749**	**3 206 541**	**3 052 129**

3 Forest Protection

3.2 Other Insects and Diseases

Current Situation by Administrative Region

	THE MER'S ADMINISTRATIVE REGIONS								
	01	02	03	04	05	06	07	08	09
Distribution of sampling by groups of species									
— Hardwoods 100%	10	5	17	12	6	20	10	13	6
— Softwoods 100%	19	11	16	13	17	10	9	9	6
Insects most detrimental in the forest apart from the spruce budworm	Spruce bud moth	Swaine jack-pine sawfly	White pine weevil	Swaine jack-pine sawfly	White pine weevil	Bruce spanworm	Bruce spanworm	Forest tent caterpillar	Larch aspen tortrix
	Poplar serpentine leafminer	Larch aspen tortrix	Birch casebearer	White pine weevil		Gypsy moth	Gypsy moth	White pine weevil	Poplar serpentine leafminer
Most prevalent diseases	Gremmeniella canker	Western gall rust	Hardwood dieback	Gremmeniella canker	Climatic damages	Gremmeniella canker	Gremmeniella canker	Western gall rust	Gremmeniella canker
			Gremmeniella canker	Hardwood dieback	Hardwood dieback	Dutch elm disease	White pine blister rust	Gremmeniella canker	

Entomological and Pathological Problems

a) Softwoods

SPECIES/ INSECTS AND DISEASES	MER ADM. REGIONS								
	01	02	03	04	05	06	07	08	09
SPRUCE (plantations)									
— Spruce budworm	L	T	T	T	T	T	—	—	T
— Spruce bud moth	L	—	T	—	T	T	T	—	T
— White pine weevil	L	—	L	L	L	M	L	L	—
BALSAM FIR									
— Spruce budworm	M	L	L	M	—	M	—	—	H
PINE (plantations)									
— Gremmeniella canker	M	T	T	L	T	L	L	T	H
RED PINE (plantations)									
— Red-headed pine sawfly	—	—	—	T	—	T	T	—	—
JACK PINE									
— Swaine jack-pine sawfly	T	L	—	L	—	T	T	—	—
— Western gall rust	—	M	—	—	—	—	—	M	M
EASTERN WHITE PINE									
— White pine blister rust	T	—	M	T	T	L	T	L	—

b) Hardwoods

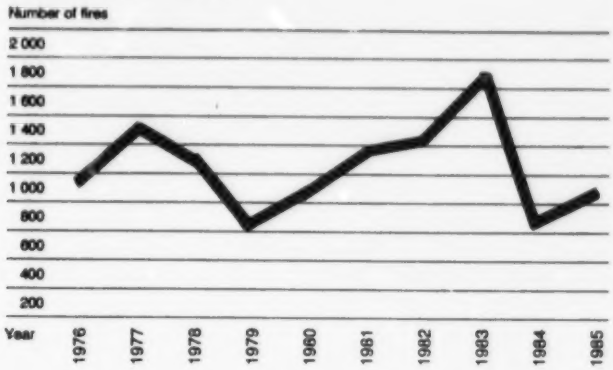
SPECIES/ INSECTS AND DISEASES	MER ADM. REGIONS								
	01	02	03	04	05	06	07	08	09
WHITE BIRCH									
— Birch casebearer	T	L	M	M	—	—	—	—	T
YELLOW BIRCH, OAK, MAPLE, ASH, BEECH									
— Dieback	T	T	M	L	L	L	L	T	—
SUGAR MAPLE, POPLAR									
— Bruce spanworm	—	—	—	T	T	L	H	—	—
AMERICAN ELM									
— Dutch elm disease	T	T	M	M	M	M	H	T	—
OAK, POPLAR, BIRCH, MAPLE									
— Gypsy moth	—	—	T	T	T	L	M	—	—
— Forest tent caterpillar	—	—	—	T	—	—	T	H	—

Note: H = High
M = Moderate
T = Trace
L = Light

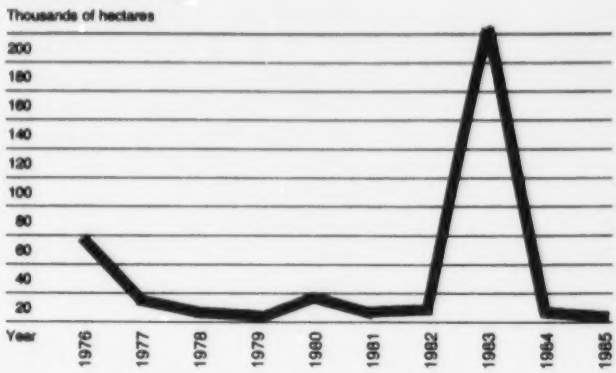
3 Forest Protection

3.3 Forest Fires

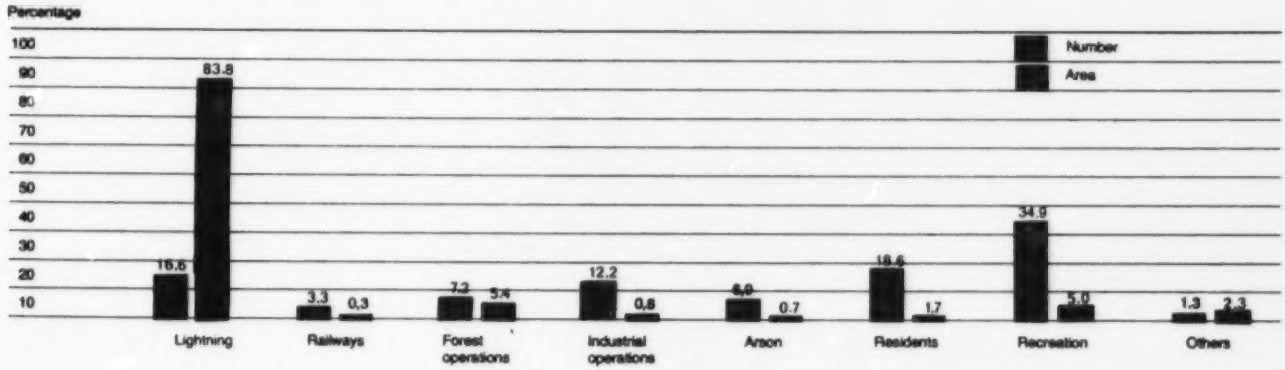
Number of Fires



Areas Burned



Forest Fires between 1976 and 1985 Distribution According to Cause *(%)*



Areas Destroyed by Forest Fire *(hectares)*

TYPES OF STANDS	1977	1978	1979	1980	1981	1982	1983	1984	1985	Total
Mature	8 958	677	1 239	1 807	1 552	5 818	173 516	1 502	1 077	222 097
Immature	1 718	581	712	2 532	364	905	27 245	545	654	46 039
Regenerated	435	201	543	564	224	385	5 977	365	161	15 048
Regenerating (after harvesting)	2 320	1 334	569	2 329	239	681	15 431	636	501	32 658
Others	746	878	137	5 855	71	85	16 492	10	243	29 918
Total	**14 177**	**3 671**	**3 200**	**13 087**	**2 450**	**7 874**	**238 661**	**3 058**	**2 636**	**345 760**

3.3 Forest Fires (continued)

Distribution by the MER's Administrative Regions

		Administrative Regions										Total
		01	02	03	04	05	06	07	08	09	10	
1976	N	86	169	68	59	7	67	199	227	114	0	996
	S	264	30 924	63	239	14	85	650	4 212	20 491	0	56 942
1977	N	74	131	96	146	19	129	363	307	56	0	1 321
	S	44	677	260	2 673	82	2 271	2 993	5 131	40	0	14 171
1978	N	112	147	115	103	15	132	192	181	163	0	1 160
	S	1 043	619	294	392	19	85	240	601	371	0	3 664
1979	N	36	89	70	55	20	41	76	144	84	0	615
	S	50	212	68	34	7	85	62	380	2 303	0	3 201
1980	N	26	168	103	76	13	92	112	184	87	9	861
	S	28	4 133	125	142	14	191	176	8 089	279	0	13 177
1981	N	24	235	113	89	18	119	103	315	98	0	1 114
	S	14	1 350	88	309	5	146	100	335	134	0	2 481
1982	N	40	194	121	121	22	176	250	231	47	0	1 202
	S	44	1 953	119	4 828	16	222	293	131	364	0	7 970
1983	N	80	281	189	199	12	157	233	367	135	0	1 653
	S	146	161 294	399	73 853	2	127	534	2 380	167	0	238 902
1984	N	45	97	70	67	27	79	92	161	45	0	683
	S	87	2 052	112	147	26	118	68	364	108	0	3 082
1985	N	67	126	85	83	16	129	128	177	69	0	880
	S	75	598	112	176	12	251	164	1 219	90	0	2 697
Total	**N**	**590**	**1 637**	**1 030**	**998**	**169**	**1 121**	**1 748**	**2 294**	**898**	**0**	**10 485**
	S	**1 795**	**203 812**	**1 640**	**82 793**	**197**	**3 581**	**5 280**	**22 842**	**24 347**	**0**	**345 287**
Average	**N**	**59**	**164**	**103**	**100**	**17**	**112**	**175**	**229**	**90**	**0**	**1 049**
	S	**180**	**20 381**	**164**	**8 279**	**20**	**358**	**528**	**2 284**	**2 435**	**0**	**34 629**

Note: N number of fires
A areas destroyed (in hectares)

Distribution of Fire Protection *(intensive protection zone)**

Parties Involved		Costs in 1984 (million $)			Costs in 1985 (million $)		
		Organization	Extinguishing	Total	Organization	Extinguishing	Total
Government	$	15.59	0.87	16.46	14.84	1.47	16.31
	%	68.1	85.3	68.8	61.2	85.5	62.8
Members of other conservation societies	$	4.60	0.15	4.75	4.72	0.25	4.97
	%	20.1	14.7	19.9	19.5	14.5	19.1
Holders of commercial logging permits	$	2.71	—	2.71	4.69	—	4.69
	%	11.8	—	11.3	19.3	—	18.1
Total	**$**	**22.90**	**1.02**	**23.92**	**24.25**	**1.72**	**25.97**
	%	100	100	100	100	100	100

*Intensive protection: Systematic fight against all fires likely to damage the forest, as soon as they are discovered, combined with preventive measures.
Intensive protection zone: All forests under management and the territory surrounding them. This zone covers more than 70% of the commercial forest region. It extends from the most southerly part of Québec to about the 51st parallel.

4 Forest Management

4.1 Annual Allowable Cut

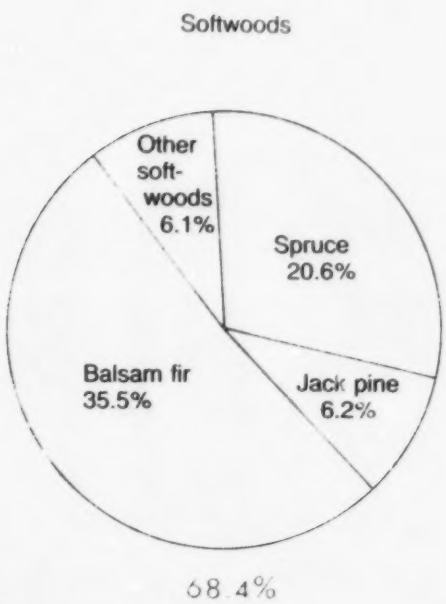
A. Introduction

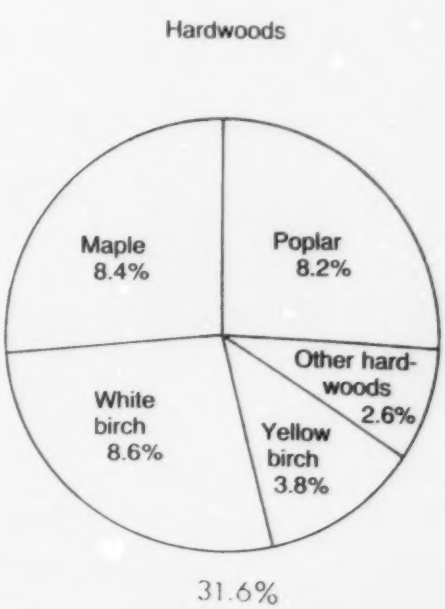
The annual allowable cut for Québec's public forests was revised in 1986, and was dealt with in a publication. It was calculated usin 225 000 km² of the productive forest land in the commuter operations zone and the pulpwood and sawlogs operation zone. Th annual allowable cut for small and large private forest land was calculated using an area of 63 000 km².

B. Annual Allowable Cut, by the MER's Administrative Regions

	In Public Forests			In Private Forests			Total			
	Balsam Fir, Spruce, Jack Pine 1 000 m³	Other Soft-woods 1 000 m³	Hard-woods 1 000 m³	Balsam Fir, Spruce, Jack Pine 1 000 m³	Other Soft-woods 1 000 m³	Hard-woods 1 000 m³	Balsam Fir, Spruce, Jack Pine 1 000 m³	Other Soft-woods 1 000 m³	Hard-woods 1 000 m³	All Species 1 000 m³
01 Bas-Saint-Laurent — Gaspésie	2 560	160	490	1 091	208	645	3 651	368	1 135	5 154
02 Saguenay — Lac-Saint-Jean	6 757	16	1 483	157	25	231	6 914	41	1 714	8 669
03 Québec	792	18	244	1 275	243	1 488	2 067	261	1 732	4 060
04 Trois-Rivières	3 055	82	904	477	214	737	3 532	296	1 641	5 469
05 Estrie	23	2	26	368	157	781	391	159	807	1 357
06 Montréal	480	49	382	326	340	1 594	806	389	1 976	3 171
07 Outaouais	2 066	527	1 960	239	291	1 070	2 305	818	3 030	6 153
08 Abitibi — Témiscamingue	5 556	540	2 062	121	5	300	5 677	545	2 362	8 584
09 Côte-Nord	4 088	13	471	160	7	113	4 248	20	584	4 852
TOTAL	**25 377**	**1 407**	**8 022**	**4 214**	**1 490**	**6 959**	**29 591**	**2 897**	**14 981**	**47 469**

C. Distribution of the Annual Allowable Cut, by Species *(public and private forests)*





4 Forest Management

4.2 Harvest

Volume of Wood Harvested in Québec

A) By Socioeconomic Zone

	Zones															
	1984-1985								1985-1986							
	Commuter		Pulpwood and Sawlogs		Pulp-wood		Total		Commuter		Pulpwood and Sawlogs		Pulp-wood		Total	
	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%	1 000 m³	%
Total annual harvest	**20 989**	**100**	**10 211**	**100**	**32**	**100**	**31 232**	**100**	**20 879**	**100**	**9 712**	**100**	**77**	**100**	**30 668**	**100**
Softwoods	16 672	79	4 931	97	32	100	26 635	85	16 709	80	9 475	98	77	100	26 261	86
Hardwoods	4 317	21	280	3	—	—	4 597	15	4 170	20	237	2	—	—	4 407	14
Québec public forests	**13 762**	**66**	**10 211**	**100**	**32**	**100**	**24 005**	**85**	**13 434**	**64**	**9 712**	**100**	**77**	**100**	**23 223**	**76**
Softwoods	11 430	83	9 931	97	32	100	21 393	89	11 246	84	9 475	98	77	100	20 798	90
Hardwoods	2 332	17	280	3	—	—	2 612	11	2 188	16	237	2	—	—	2 425	10
Private forests*	**7 227**	**34**	—	—	—	—	**7 227**	**15**	**7 445**	**36**	—	—	—	—	**7 445**	**24**
Softwoods	5 242	73	—	—	—	—	5 242	73	5 463	73	—	—	—	—	5 463	73
Hardwoods	1 985	27	—	—	—	—	1 985	27	1 982	27	—	—	—	—	1 982	27

* Estimate

B) By the MER's Administrative Regions *('000 m³)*

1984-1985

	Public Forests			Private Forests[1]			Total		
	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total
01 Bas-Saint-Laurent — Gaspésie	2 575	276	2 851	1 724	455	2 179	4 299	731	5 030
02 Saguenay — Lac-Saint-Jean	7 103	284	7 387	223	52	275	7 326	336	7 662
03 Québec	1 255	122	1 377	1 894	286	2 180	3 149	408	3 557
04 Trois-Rivières	1 808	364	2 172	293	117	410	2 101	481	2 582
05 Estrie	37	19	56	439	364	803	476	383	859
06 Montréal	747	254	1 001	319	301	620	1 066	555	1 621
07 Outaouais	1 312	590	1 902	266	352	618	1 578	942	2 520
08 Abitibi — Témiscamingue	4 465	664	5 129	47	57	104	4 512	721	5 233
09 Côte-Nord	2 091	39	2 130	37	1	38	2 128	40	2 168
Total	**21 393**	**2 612**	**24 005**	**5 242**	**1 985**	**7 227**	**26 635**	**4 597**	**31 232**

1985-1986

	Public Forests			Private Forests[1]			Total		
	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total
01 Bas-Saint-Laurent — Gaspésie	2 725	222	2 947	1 759	451	2 210	4 484	673	5 157
02 Saguenay — Lac-Saint-Jean	6 187	229	6 416	293	18	311	6 480	247	6 727
03 Québec	1 232	135	1 367	1 947	239	2 186	3 179	374	3 553
04 Trois-Rivières	1 427	324	1 751	265	121	386	1 692	445	2 137
05 Estrie	31	38	69	287	341	628	318	379	697
06 Montréal	796	232	2 028	540	408	948	1 336	640	1 976
07 Outaouais	1 024	541	1 565	236	266	502	1 260	807	2 067
08 Abitibi — Témiscamingue	5 358	688	6 046	91	136	227	5 449	824	6 273
09 Côte-Nord	2 018	16	2 034	45	2	47	2 063	18	2 081
Total	20 798	2 425	23 223	5 463	1 982	7 445	26 261	4 407	30 668

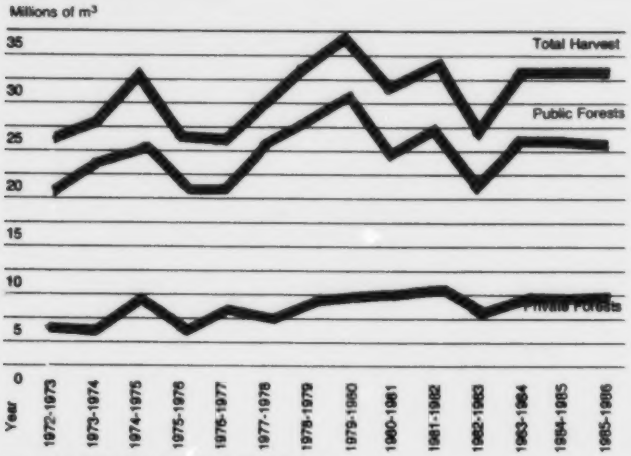
[1] Estimated data, excluding the production of firewood by small woodlot owners.

4 Forest Management

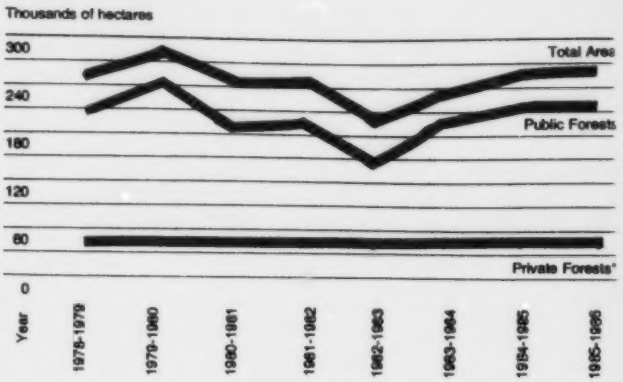
4.2 Harvest (continued)

Evolution of the Harvest *(excluding firewood)*

A) BY VOLUME

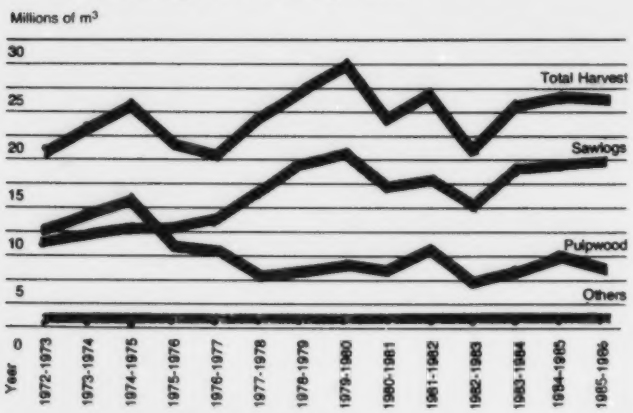


B) BY AREA

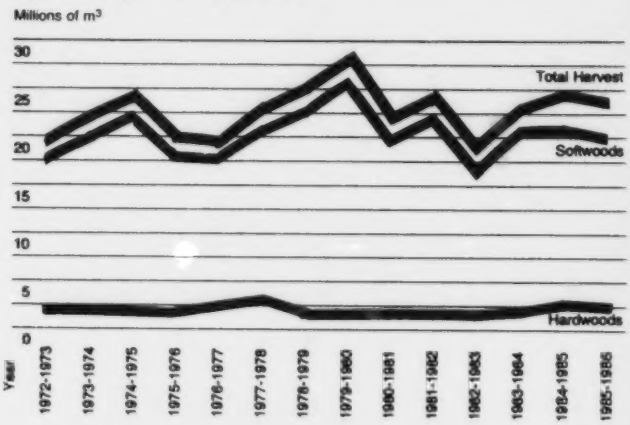


* Estimate made by the Fédération des producteurs de bois du Québec.

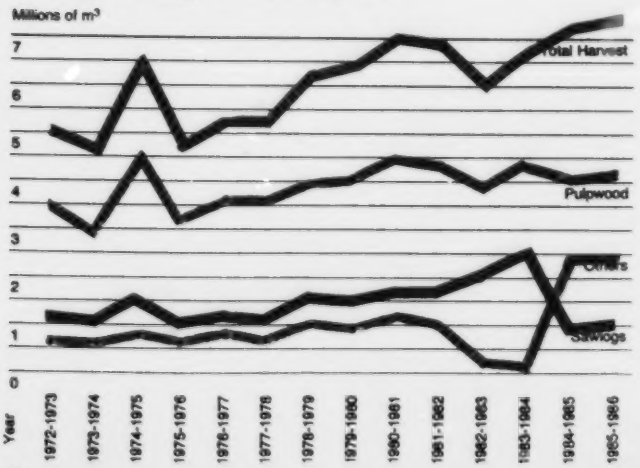
C) IN PUBLIC FORESTS *According to Primary Use*



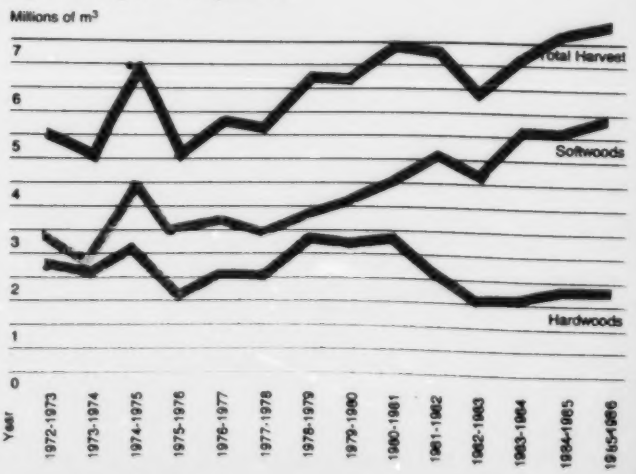
By Groups of Species



D) IN PRIVATE FORESTS *According to Primary Use*

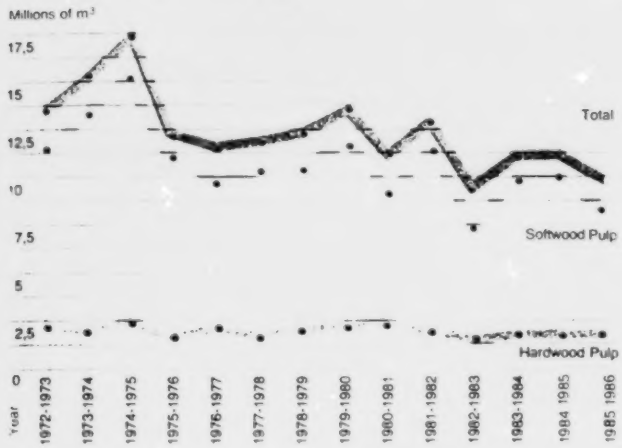


By Groups of Species



4.2 Harvest (continued)

E) PULPWOOD *in Public and Private Forests, by Groups of Species*



Transportation of Logs from Public Forests to Mills

Means of Transportation	1984-1985	1985-1986
Truck	76%	76%
River drive	22%	23%
Railroad	2%	1%

River Drive

	1984-1985	1985-1986
Network length (km)	1 980	1 980
Volume driven (1 000 m³)	5 300	5 200
Average distance driven (km)	240	240

Logging Systems in Public Forests

	1983-1984			1984-1985			1985-1986		
	Mechanical	Manual	Total	Mechanical	Manual	Total	Mechanical	Manual	Total
Full tree*	44%	22%	66%	40%	28%	68%	41%	29%	70%
Tree length*	—	28%	28%	1%	24%	25%	1%	23%	24%
Shortwood**	3%	3%	6%	2%	5%	7%	3%	3%	6%
Total	**47%**	**53%**	**100%**	**43%**	**57%**	**100%**	**45%**	**55%**	**100%**

* Part of this wood is crosscut at the jetty for river driving

** Includes only timber crosscut at the stump

Volume of the Harvest from Private Forests Marketed by Syndicates and Marketing Boards

Syndicate or Board	1982		1983		1984		1985	
	Harvest m³ stacked*	Number of Producers	Harvest m³ stacked*	Number of Producers	Harvest m³ stacked*	Number of Producers	Harvest m³ stacked*	Number of Producers
Gaspésie	413 481	2 423	507 802	2 630	588 361	2 365	559 684	2 485
Bas-Saint-Laurent	996 015	3 500	1 379 811	5 518	1 161 898	4 715	1 234 249	6 225
Saguenay — Lac-Saint-Jean	324 471	1 702	366 130	1 927	283 763	1 584	311 320	1 500
La Pocatière	443 680	4 000	451 890	3 000	425 570	2 200	394 450	2 339
Beauce	592 563	4 900	612 204	5 310	806 672	4 871	798 726	4 741
Québec	828 940	5 000	802 396	6 393	777 513	5 512	785 526	5 300
Estrie	568 396	2 429	586 601	1 927	653 418	2 253	510 867	1 983
Nicolet	131 517	506	141 559	800	148 627	600	148 665	750
Mauricie	197 545	340	188 414	332	242 587	284	219 168	350
Montréal	—	—	91 935	200	102 402	100	134 437	200
Laurentides	414 173	700	397 643	700	362 751	700	336 937	600
Labelle	245 991	530	200 623	530	206 896	525	230 201	525
Gatineau	142 055	400	127 196	400	131 175	390	147 635	390
Pontiac	—	—	—	—	—	—	270 295	375
Abitibi — Témiscamingue	203 361	269	189 228	338	141 820	201	226 991	285
Total	**5 502 188**	**26 699**	**6 043 432**	**30 005**	**6 033 453**	**26 300**	**6 309 151**	**28 048**

* 1 m³ solid = 1.5 m³ stacked

4 Forest Management

4.3 Infrastructure for the Transportation of Roundwood from Public Forests to Mills

The MER's Network of Permanent Forest Roads 1984-1985

Administrative Region	SOCIOECONOMIC ZONES						TOTAL	
	Commuter		Pulpwood-Sawlogs		Pulpwood			
	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)
01 Bas-Saint-Laurent — Gaspésie	1 240	117	—	—	—	—	1 240	117
02 Saguenay — Lac-Saint-Jean	1 199	61	557	35	1	—	1 757	96
03 Québec	239	19	—	—	—	—	239	19
04 Trois-Rivières	90	7	653	19	—	—	643	26
05 Estrie	—	—	—	—	—	—	—	—
06 Montréal	83	4	—	—	—	—	83	4
07 Outaouais	324	9	580	27	—	—	904	36
08 Abitibi — Témiscamingue	631	29	865	37	—	—	1 496	66
09 Côte-Nord	450	29	120	—	130	5	700	34
TOTAL	**4 256**	**275**	**2 775**	**118**	**131**	**5**	**7 162**	**398**

1985-1986

Administrative Region	SOCIOECONOMIC ZONES						TOTAL	
	Commuter		Pulpwood-Sawlogs		Pulpwood			
	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)	Roads (km)	Bridges (number)
01 Bas-Saint-Laurent — Gaspésie	1 242	120	—	—	—	—	1 242	120
02 Saguenay — Lac-Saint-Jean	1 227	61	592	36	1	—	1 820	97
03 Québec	257	20	—	—	—	—	257	20
04 Trois-Rivières	108	7	656	19	—	—	764	26
05 Estrie	—	—	—	—	—	—	—	—
06 Montréal	83	7	—	—	—	—	83	7
07 Outaouais	324	9	580	27	—	—	904	36
08 Abitibi — Témiscamingue	634	29	883	38	—	—	1 517	67
09 Côte-Nord	451	29	131	—	144	5	726	34
TOTAL	**4 326**	**282**	**2 842**	**120**	**145**	**5**	**7 313**	**407**

Network of Rivers Used for Driving *(km)*

(1984-1985 / 1985-1986)

Administrative Region	SOCIOECONOMIC ZONES		TOTAL
	Commuter	Pulpwood-Sawlogs	
02 Saguenay — Lac-Saint-Jean	231	87	318
04 Trois-Rivières	350	262	612
07 Outaouais	588	262	850
09 Côte-Nord	156	44	200
TOTAL	**1 325**	**655**	**1 980**

Railway Network Used for Transporting Roundwood *(km)*

(1984-1985 / 1985-1986)

Administrative Region	SOCIOECONOMIC ZONES		TOTAL
	Commuter	Pulpwood-Sawlogs	
02 Saguenay — Lac-Saint-Jean	237	125	362
04 Trois-Rivières	356	81	437
TOTAL	**593**	**206**	**799**

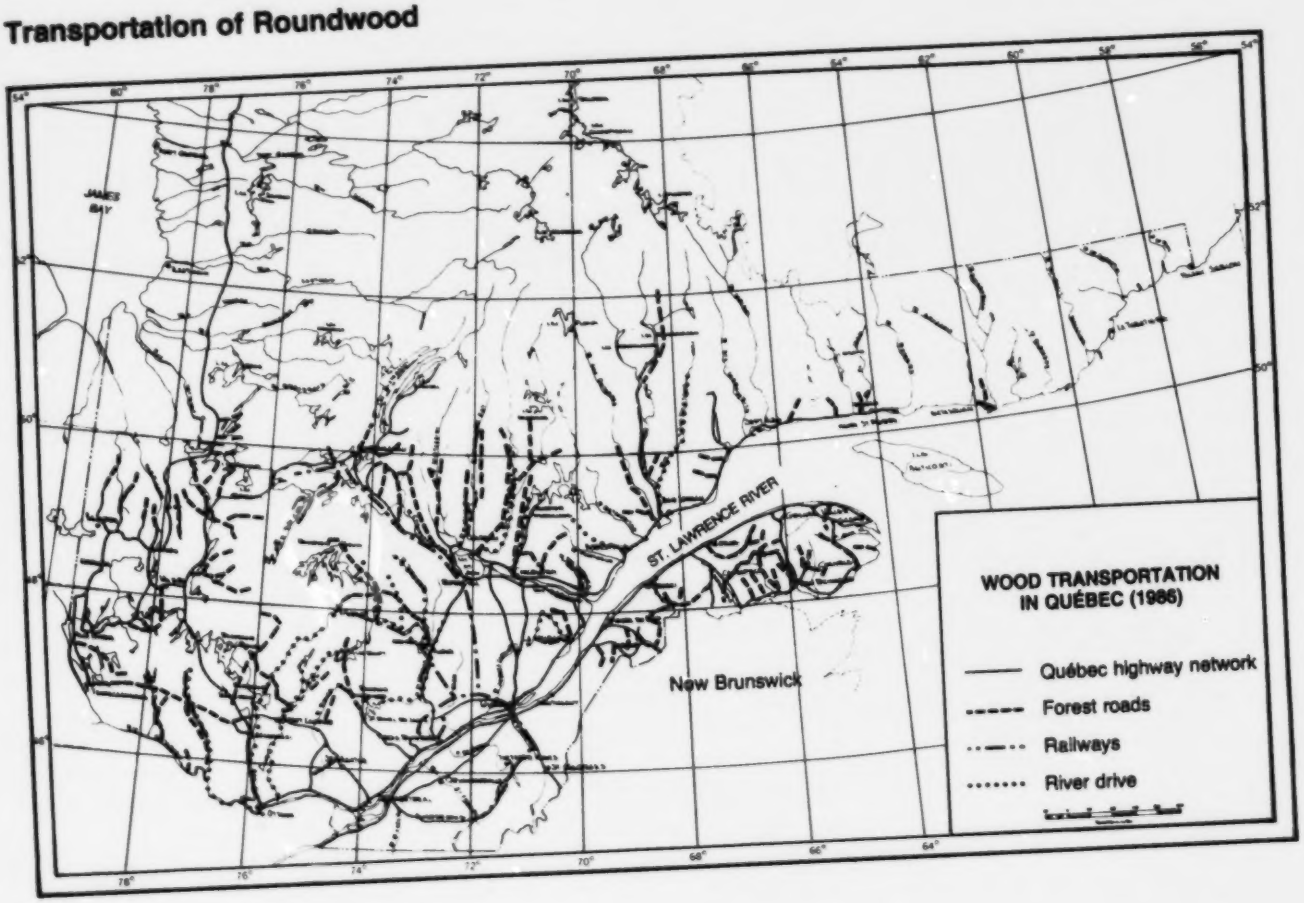
Construction and Improvement of Forest Roads *(km)* and Bridges *(units)*

	CONSTRUCTION						IMPROVEMENT					
	MER		Users		% of Network /1975		MER		Users		% of Network /1975	
	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges	Roads	Bridges
1980	72	2	450	26	11.7	11.9	—	—	355	8	6.6	2.5
1981	56	1	464	27	11.6	11.9	—	—	311	6	5.3	1.7
1982	78	—	178	8	5.7	3.4	—	—	154	3	2.4	0.8
1983	29	—	269	9	6.7	3.8	16	—	245	6	3.9	1.6
1984	29	—	188	8	4.9	3.4	—	—	103	2	1.5	0.5
1985	14	—	137	9	3.4	3.8	—	—	51	3	0.7	0.8

4 Forest Management

4.3 Infrastructure for the Transportation of Roundwood from Public Forests to Mills (continued)

Transportation of Roundwood



4 Forest Management

4.4 Reforestation

Harvesting of Cones (in hectolitres) by Species and by the MER's Administrative Regions in 1984-1985

SPECIES	THE MER'S ADMINISTRATIVE REGIONS									TOTAL
	01	02	03	04	05	06	07	08	09	
Balsam fir	2.0			17.4	66.5	43.2	63.4			192.5
European larch						4.8				4.8
Tamarack	504.2	0.7	26.9	22.4	8.9	68.6	9.7	106.3		747.7
Red spruce						5.0	13.2			18.2
Norway spruce	364.9		76.0	969.3	586.3	1 425.2	230.1	15.8	74.9	3 742.5
White spruce	8 263.6	95.9	8 974.0	1 247.6	2 305.2	8 943.4	2 603.6	546.1	570.6	33 550.0
Black spruce	1 308.9	1 392.7	1.0	542.4	4.0	1 012.0	589.0	123.1	745.4	5 718.5
Japanese larch			18.6	37.5	40.7	134.4	162.3			393.5
Jack pine		658.7		234.7				5 563.1	19.2	6 475.7
Red pine				416.9	20.7	337.1	18.4	28.6		821.7
Eastern white pine		2.8		42.0		245.8	37.6	452.4	16.0	796.6
Red oak						3.2				3.2
TOTAL	**10 443.6**	**2 150.8**	**9 096.5**	**3 530.2**	**3 032.3**	**12 222.7**	**3 727.3**	**6 835.4**	**1 426.1**	**52 464.9**

Harvesting of Cones (in hectolitres) by Species and by the MER's Administrative Regions in 1985-1986

SPECIES	THE MER'S ADMINISTRATIVE REGIONS									TOTAL
	01	02	03	04	05	06	07	08	09	
Black spruce	769.45	35.56		241.18			16.00			1 062.19
Jack pine	109.36	645.89		1 034.81			43.67	243.90	36.20	2 113.83
Red pine	5.77	38.15	90.05	612.50	142.77	163.90	225.26	26.80	4.00	1 309.20
Eastern white pine			72.30	264.08	163.58		235.72	469.00	20.00	1 224.68
Scots pine				64.00						64.00
Red ash				0.30			6.55			6.85
Buttemut				0.11			0.73			0.84
Black walnut						11.30	0.99			12.29
Black cherry						0.20	0.66			0.86
White oak						2.70	0.65			3.35
Red oak				1.73		3.30	1.05	0.50		6.58
Basswood							0.26			0.26
Others				0.01			0.02			0.03
TOTAL	**884.58**	**719.60**	**162.35**	**2 218.72**	**306.35**	**181.40**	**531.56**	**740.20**	**60.20**	**5 804.96**

Area of Seed Tree Orchards *(hectares)*

SPECIES	THE MER'S ADMINISTRATIVE REGIONS									TOTAL
	01	02	03	04	05	06	07	08	09	
Dunkeld larch	1.0									1.0
Tamarack	4.3									4.3
White spruce	26.8		21.0	8.0						55.8
Black spruce	144.0	56.3	24.0			40.0		16.0		280.3
Jack pine		12.5		27.7		68.3		69.6		178.1
Red pine						2.7				2.7
Eastern white pine			4.0			4.5				8.5
TOTAL	**176.1**	**68.8**	**49.0**	**35.7**		**115.5**		**85.6**		**530.7**

4 Forest Management

4.4 Reforestation (continued)

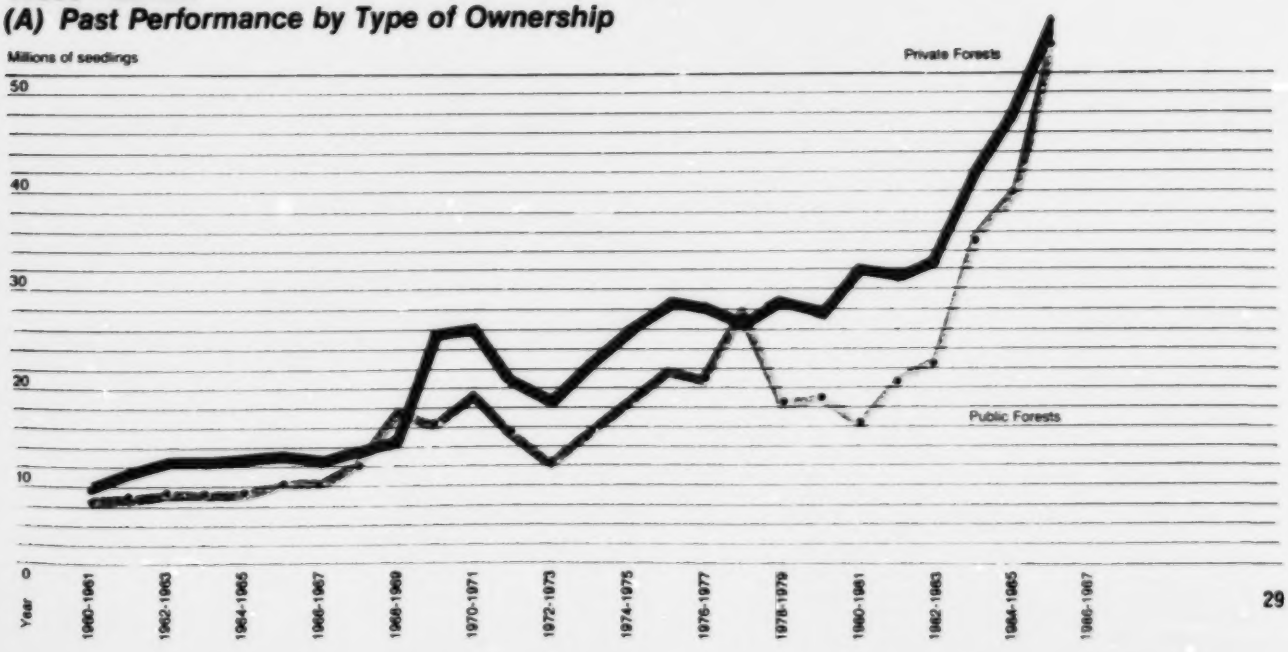
Seedling Production

REGION	PRODUCTION*	SEEDLINGS AVAILABLE FOR REFORESTATION ('000)					
		1984-1985			1985-1986		
		Bare root	Potted	Total	Bare root	Potted	Total
01 Bas-Saint-Laurent—Gaspésie	PU	18 944	1 147	20 091	26 884	1 979	28 863
	PR	—	382	382	—	613	613
	TL	18 944	1 529	20 473	26 884	2 592	29 476
02 Saguenay—Lac-Saint-Jean	PU	6 003	48	6 051	8 226	2 140	10 366
	PR	—	387	387	—	—	—
	TL	6 003	435	6 438	8 226	2 140	10 366
03 Québec	PU	3 848	—	3 848	5 988	—	5 988
	PR	—	2 769	2 769	1 015	6 070	7 085
	TL	3 848	2 769	6 617	7 003	6 070	13 073
04 Trois-Rivières	PU	3 820	—	3 820	5 876	359	6 235
	PR	—	2 286	2 286	—	903	903
	TL	3 820	2 286	6 106	5 876	1 262	7 138
05 Estrie	PU	—	9 192	9 192	—	5 851	5 851
	PR	354	—	354	2 035	—	2 035
	TL	354	9 192	9 546	2 035	5 851	7 886
06 Montréal	PU	6 836	—	6 836	11 733	—	11 733
	PR	—	78	—	587	2 507	3 094
	TL	6 836	78	6 836	12 320	2 507	14 827
07 Outaouais	PR	—	—	—	860	250	1 110
	TL	—	—	—	860	250	1 110
08 Abitibi—Témiscamingue	PU	7 581	—	7 581	6 335	793	7 128
	PR	—	4 930	4 930	—	6 600	6 600
	TL	7 581	4 930	12 511	6 335	7 493	13 828
09 Côte-Nord	PR	—	340	340	—	440	440
	TL	—	340	340	—	440	440
Subtotal	**PU**	**47 032**	**10 387**	**57 419**	**65 042**	**11 122**	**76 164**
	PR	**354**	**11 172**	**11 526**	**4 497**	**17 383**	**21 880**
	TL	**47 386**	**21 559**	**68 945**	**69 539**	**28 505**	**98 044**
Purchases		3 600	607	4 207	—	—	—
TOTAL		**50 986**	**22 166**	**73 152**	**69 539**	**28 505**	**98 044**

* PU = Public forests PR = Private forests TL = Total

Trees Planted

(A) Past Performance by Type of Ownership



4.4 Reforestation (continued)

B) Trees Planted in 1984-1985 by Region, Type of Ownership, and Species *('000 seedlings)*

		Balsam fir	European larch	Tamarack	Japanese larch	Norway spruce	White spruce	Black spruce	Red spruce	Jack pine	Red pine	White pine	Scots pine	Others	Total
01	PU					67	1 140	6 315		149		22			7 693
Bas-Saint-	PR	111			2	2 249	4 886	3 652		292	51		100	95	11 448
Laurent —	TL	111			2	2 316	6 026	9 977		441	51	22	100	95	19 141
Gaspésie															
02	PU						282	1 141		1 578					3 001
Saguenay —	PR	25				6	575	363		828	59		66	5	1 927
Lac-Saint-Jean	TL	25				6	6 867	1 504		2 406	59		66	5	4 928
03	PU					585	970	1 330	222	326					3 433
Québec	PR	1 108		85		1 587	2 983	2 177	770	393	266	99	68	11	9 547
	TL	1 108		85		2 172	3 953	3 507	992	719	266	99	68	11	12 980
04	PU							3 139	234	2 057					5 430
Trois-Rivières	PR	292	3	15	98	313	832		7	1 210	921	38	123	5	3 859
	TL	292	3	15	98	313	832	3 139	241	3 267	921	38	123	5	9 289
05	PU						45								45
Estrie	PR	1944		11	139	1 283	1 978	45			271	63	113	7	5 854
	TL	1944		11	139	1 283	2 023	45			271	63	113	7	5 899
06	PU					163	113	218		168			6	3	71
Montréal	PR	431		128	7	238	174		16	50	274	79	165	102	1 664
	TL	431		128	7	401	287	218	16	218	274	79	171	105	2 335
07	PU			8		271		1 300		913	93		170		2 755
Outaouais	PR	115		163		600				664	413	90	239		2 284
	TL	115		171		871		1 300		1 577	506	90	409		5 039
08	PU			6				1 903		6 145		52			8 106
Abitibi —	PR							643		3 217		16			3 876
Témiscamingue	TL			6				2 546		9 362		68			11 982
09	PU						478	544		180					1 202
Côte-Nord	PR	3					44			42					89
	TL	3					522	544		222					1 291
	PU			**14**		**1 087**	**3 030**	**15 890**	**455**	**11 514**	**93**	**74**	**176**	**3**	**32 336**
TOTAL	**PR**	**4 029**	**3**	**402**	**246**	**6 278**	**11 472**	**6 890**	**793**	**6 696**	**2 255**	**385**	**874**	**225**	**40 548**
	TL	**4 029**	**3**	**416**	**246**	**7 365**	**14 502**	**22 780**	**1 248**	**18 210**	**2 348**	**459**	**1 050**	**228**	**72 884**

Trees Planted in 1985-1986 by Region, Type of Ownership, and Species *('000 seedlings)*

		Balsam fir	European larch	Tamarack	Japanese larch	Norway spruce	White spruce	Black spruce	Red spruce	Jack pine	Red pine	White pine	Scots pine	Others	Total
01	PU					1 648	77	8 483		3		64			10 275
Bas-Saint-	PR	152		224		3 226	3 681	4 254	65	102	233		177	45	12 159
Laurent —	TL	152		224		4 874	3 758	12 737	65	105	233	64	177	45	22 434
Gaspésie															
02	PU			46			95	3 704		3 869		5			7 719
Saguenay —	PR	29		21		21	296	625		327	34		99		1 452
Lac-Saint-Jean	TL	29		67		21	391	4 329		4 196	34	5	99		9 171
03	PU					1 108	774	1 266	481	230					3 859
Québec	PR	1 447		81		2 536	3 819	1 491	3 540	354	48	210	27	6	13 559
	TL	1 447		81		3 664	4 593	2 757	4 021	584	48	210	27	6	17 418
04	PU			6		518		3 074		3 045					6 643
Trois-Rivières	PR	469	31	74	5	796	820	129		2 017	535	60		14	4 950
	TL	469	31	80	5	1 314	820	3 203		5 062	535	60		14	11 593
05	PU					362									362
Estrie	PR	3 237		212		1 725	2 124		278		297	160	21	115	8 169
	TL	3 237		212		2 087	2 124		278		297	160	21	115	8 531
06	PU			5		866	367	544		1 520	8	75		28	3 413
Montréal	PR	478	24	171		414	543	77	63	366	669	193	1	263	3 262
	TL	478	24	176		1 280	910	621	63	1 886	677	268	1	291	6 675
07	PU			65		230	152	1 000		1 838	477	755		27	4 544
Outaouais	PR	70		125		258	349	175		540	512	229		65	2 323
	TL	70		190		488	501	1 175		2 378	989	984		92	6 867
08	PU			1 335			94	1 957		5 184	1 119	101			9 790
Abitibi —	PR			236			76	1 090		2 464	184	13			4 063
Témiscamingue	TL			1 571			170	3 047		7 648	1 303	114			13 853
09	PU							1 079		31					1 110
Côte-Nord	PR			12		3	72	62		28					177
	TL			12		3	72	1 141		59					1 287
	PU			**1 457**		**4 732**	**1 559**	**21 107**	**481**	**15 720**	**1 604**	**1 000**		**55**	**47 715**
TOTAL	**PR**	**5 882**	**55**	**1 156**	**5**	**8 979**	**11 780**	**7 903**	**3 946**	**6 198**	**2 512**	**865**	**325**	**508**	**50 114**
	TL	**5 882**	**55**	**2 613**	**5**	**13 711**	**13 339**	**29 010**	**4 427**	**21 919**	**4 116**	**1 865**	**325**	**563**	**97 829**

* PU Public forests PR Private forests TL Total

4 Forest Management

4.4 Reforestation (continued)

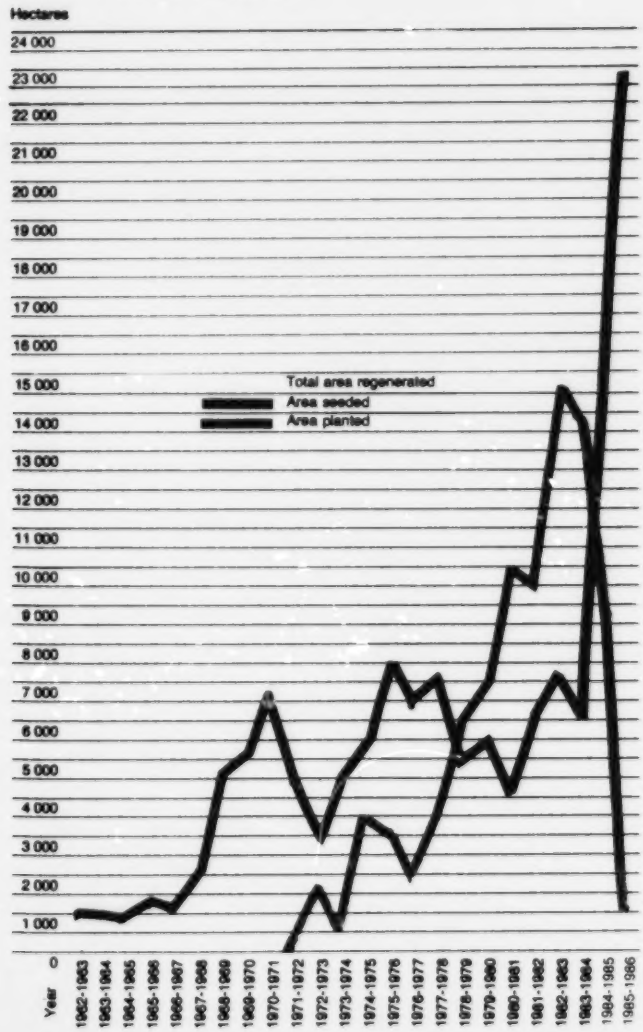
Contribution of Joint Management Organizations to the Reforestation of Private Forests

	1982		1983		1984		1985	
	Total reforestation ('000 of seedlings)	Contribution of JMO* (%)	Total reforestation ('000 of seedlings)	Contribution of JMO* (%)	Total reforestation ('000 of seedlings)	Contribution of JMO* (%)	Total reforestation ('000 of seedlings)	Contribution of JMO* (%)
01 Bas-Saint-Laurent — Gaspésie	7 684	85	10 118	86	11 448	86	12 159	76
02 Saguenay — Lac-Saint-Jean	1 587	67	2 132	61	1 927	69	1 452	63
03 Québec	5 513	34	8 385	56	9 547	50	13 559	57
04 Trois-Rivières	2 500	37	2 886	69	3 859	75	4 950	66
05 Estrie	3 602	10	3 438	19	5 854	41	8 169	41
06 Montréal	1 431	5	1 310	8	1 664	29	3 262	43
07 Outaouais	1 771	40	1 963	49	2 284	54	2 323	44
08 Abitibi — Témiscamingue	1 128	90	3 887	84	3 876	85	4 063	82
09 Côte-Nord	53	0	87	—	89	—	177	—
TOTAL	**25 270**	**50**	**34 206**	**63**	**40 548**	**65**	**50 114**	**61**

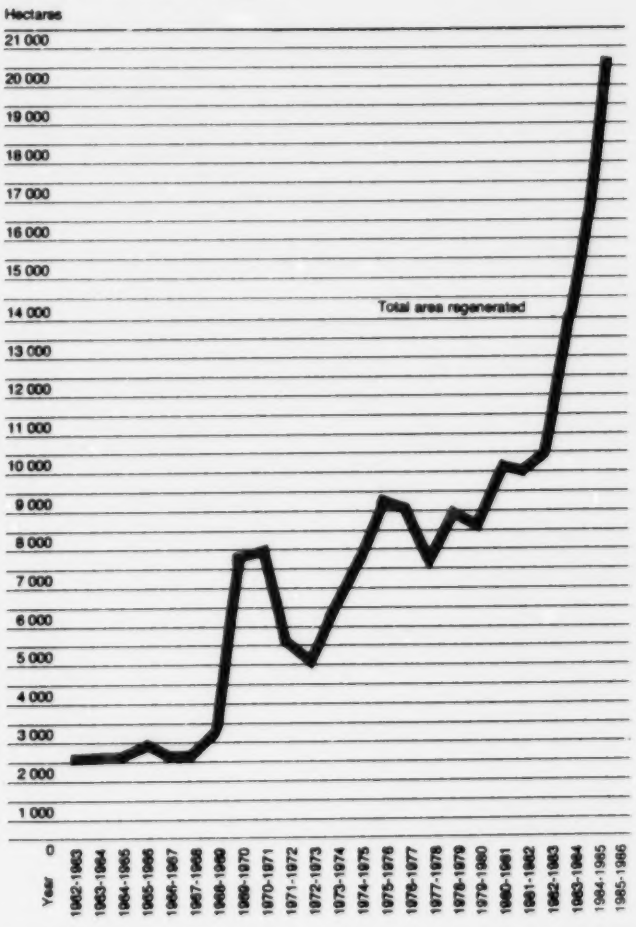
* JMO: Joint management organization

Areas Artificially Regenerated

(A) In Public Forests



*(B) In Private Forests**



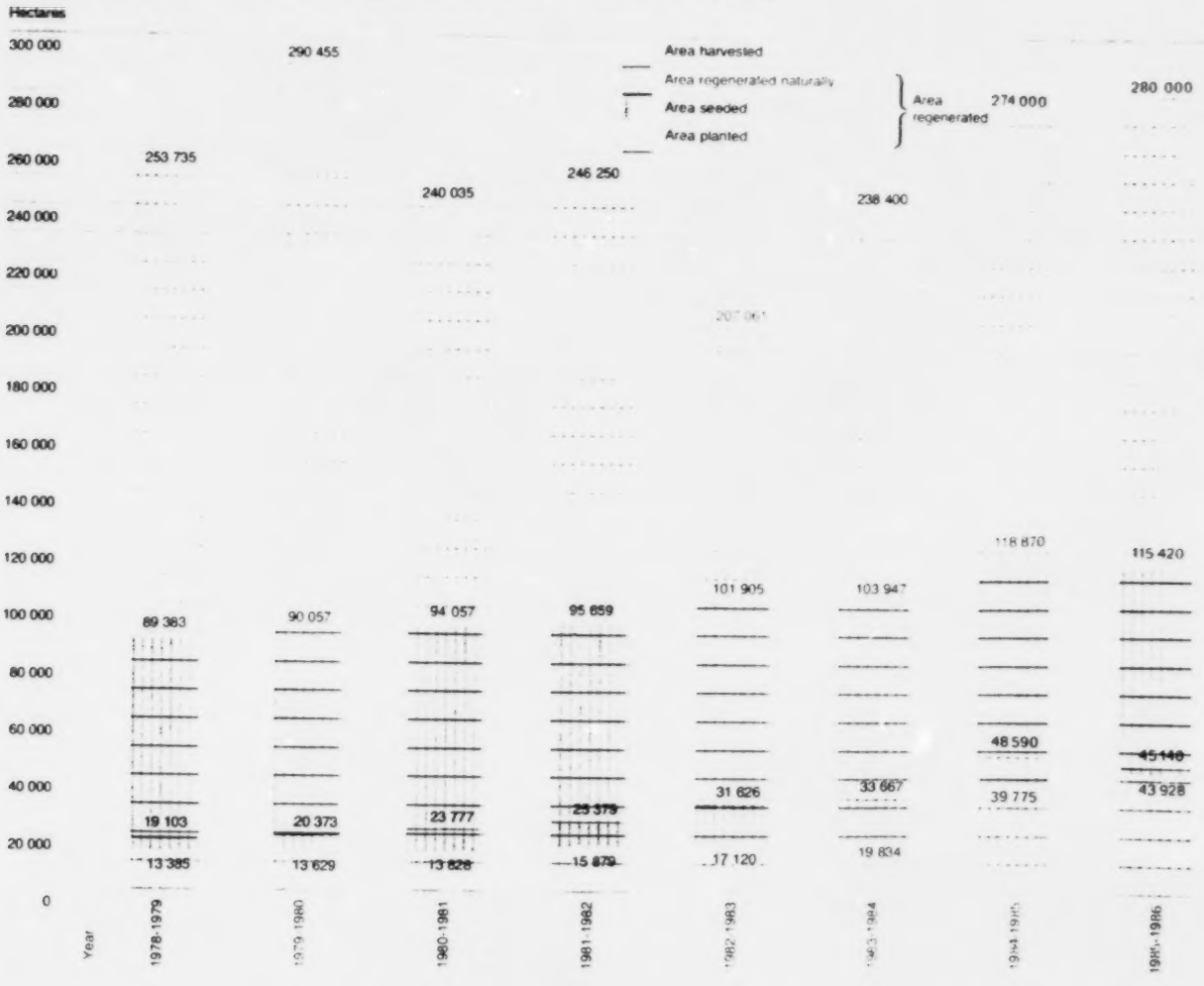
* No seeding is done in private forests.

4.4 Reforestation (continued)

Related Silvicultural Operations *(hectares)*

	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Site preparation	Plantation upkeep	Subtotal	Site preparation	Plantation upkeep	Subtotal	Site preparation	Plantation upkeep	Subtotal
1981	6 726	2 328	9 054	1 967	1 504	3 471	8 693	3 832	12 525
1982	12 756	2 678	15 434	6 006	2 632	8 638	18 762	5 310	24 072
1983	15 804	3 587	19 391	4 560	3 814	8 374	20 364	7 401	27 765
1984	25 785	5 913	31 698	3 439	6 273	9 712	29 224	12 186	41 410
1985	45 896	5 668	51 564	6 494	6 074	12 568	52 390	11 742	64 132
Average	**21 393**	**4 035**	**25 428**	**4 493**	**4 059**	**8 552**	**25 886**	**8 094**	**33 980**

Reforestation vs Harvesting *(Public and Private Forests)*



4.5 Other Forest Management Activities

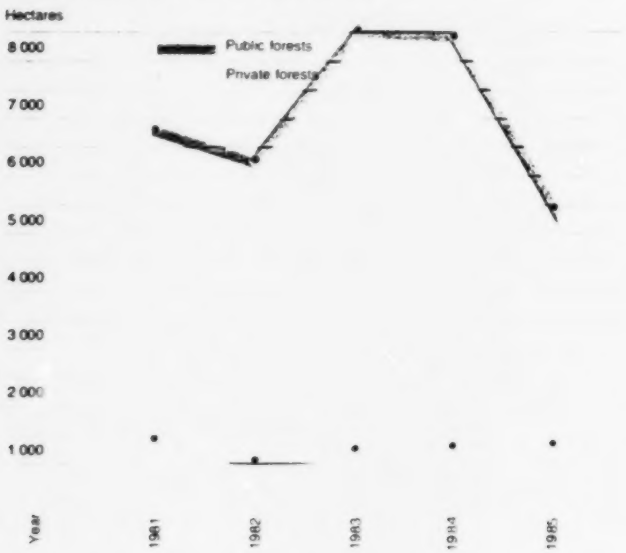
Noncommercial Treatments *(hectares)*

	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Thinning	Cleaning	Subtotal	Thinning	Cleaning	Subtotal	Thinning	Cleaning	Subtotal
1981	—	—	6 394	182	852	1 034	182*	852*	7 428
1982	2 942	2 883	5 825	212	409	621	3 154	3 292	6 446
1983	1 973	6 039	8 012	195	392	587	2 168	6 431	8 599
1984	2 831	5 081	7 912	—	—	794	2 831**	5 081**	8 706
1985	451	4 527	4 978	—	—	823	451**	4 527**	5 801
Average	**2 049**	**4 633**	**6 624**	**196**	**551**	**772**	**2 245**	**5 184**	**7 396**

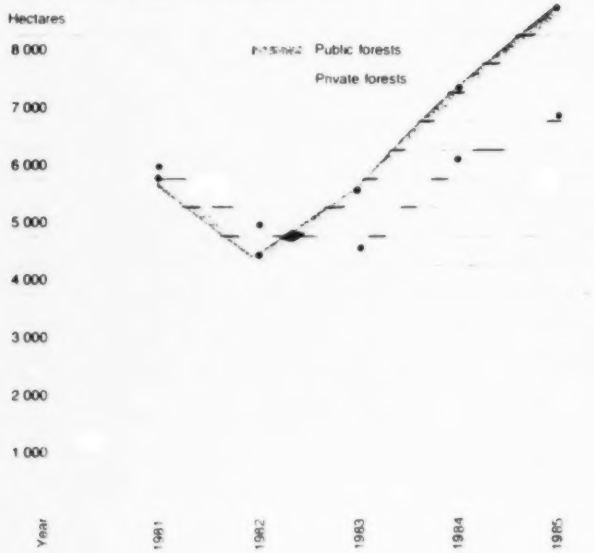
* Private forests only

** Public forests only

Noncommercial Treatments



Commercial Treatments



Commercial Treatments *(hectares)**

	PUBLIC FORESTS			PRIVATE FORESTS			TOTAL		
	Strip Cutting	Other Treatments	Subtotal	Strip Cutting	Other Treatments	Subtotal	Strip Cutting	Other Treatments	Subtotal
1981	5 000	699	5 699	31	5 621	5 652	5 031	6 320	11 351
1982	4 400	334	4 734	40	4 203	4 243	4 440	4 537	8 977
1983	3 716	591	4 307	24	2 040	2 064	3 740	2 631	6 371
1984	4 490	2 625	7 115	30	5 770	5 800	4 520	8 395	12 915
1985	4 080	4 731	8 811	42	6 623	6 665	4 122	11 354	15 476
Average	**4 337**	**1 796**	**6 133**	**34**	**4 851**	**4 885**	**4 371**	**6 647**	**11 018**

* Excluding clear cutting and salvage cutting

5 Logging

5.1 Economic Indicators

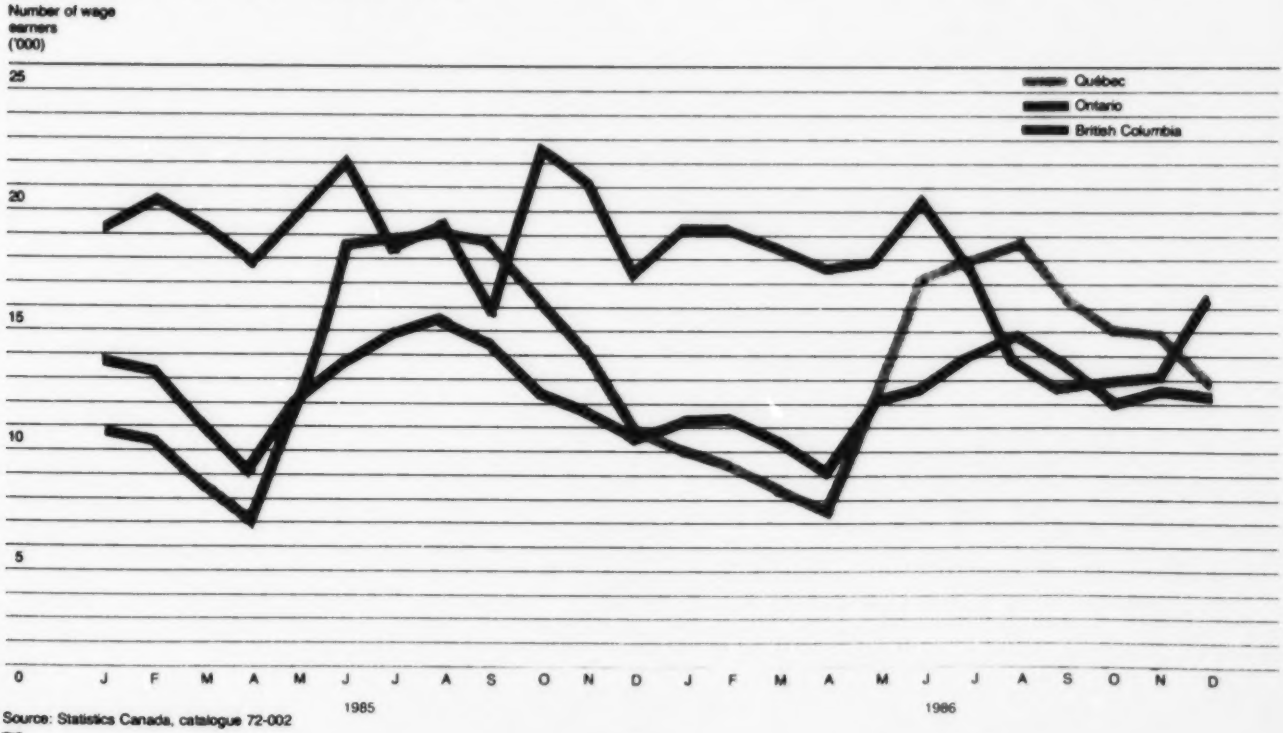
Evolution of the Economic Indicators for Logging

	Total number of employees*	Wages '000 $	Value of shipments '000 $	Value added '000 $
1970	14 815	109 057	329 026	161 069
1975	17 288	207 430	475 720	308 411
1980	11 575	221 552	695 183	347 611
1981	11 257	253 810	841 651	398 417
1982	8 994	204 828	777 350	317 817
1983	9 881	230 564	850 412	356 771
1984	10 729	243 245	937 232	407 101

* These figures cover all employees whereas other statistics include only production workers.

Source: Statistics Canada, catalogue 25-201

Employment Curve in the Logging Industry *(January 1985 to December 1986)*



Source: Statistics Canada, catalogue 72-002

5 Logging

5.2 Productivity

Employment vs Volumes of Wood Harvested

	Employment Distribution %	Harvest Distribution %	%
	1984-1986*	1984-1985	1985-1986
01 Bas-Saint-Laurent — Gaspésie	24	16	17
02 Saguenay — Lac-Saint-Jean	22	25	22
03 Québec	10	11	12
04 Trois-Rivières	8	8	7
05 Estrie	2	3	2
06 Montréal	2	5	6
07 Outaouais	7	8	7
08 Abitibi — Témiscamingue	11	17	20
09 Côte-Nord	14	7	7
TOTAL	**100**	**100**	**100**

* Estimate

Source: Emploi, rémunération et heures de travail au Québec (BSQ)

Yield *(in m³)* in Relation to the Number of Hours Worked *(production only)*

	Quebec		British Columbia		Ontario		New Brunswick	
	m³/h	(%)*	m³/h	(%)*	m³/h	(%)*	m³/h	(%)*
1980	1.03	(100)	1.32	(100)	1.00	(100)	1.18	(100)
1981	1.21	(117)	1.46	(111)	1.13	(113)	1.40	(119)
1982	1.31	(127)	1.42	(108)	1.39	(139)	1.21	(103)
1983	1.12	(109)	1.25	(45)	1.26	(126)	1.20	(102)
1984	1.05	(102)	1.17	(89)	1.06	(106)	1.15	(97)

* Index 1980 = 100%

Source: Statistics Canada, catalogue 25-201

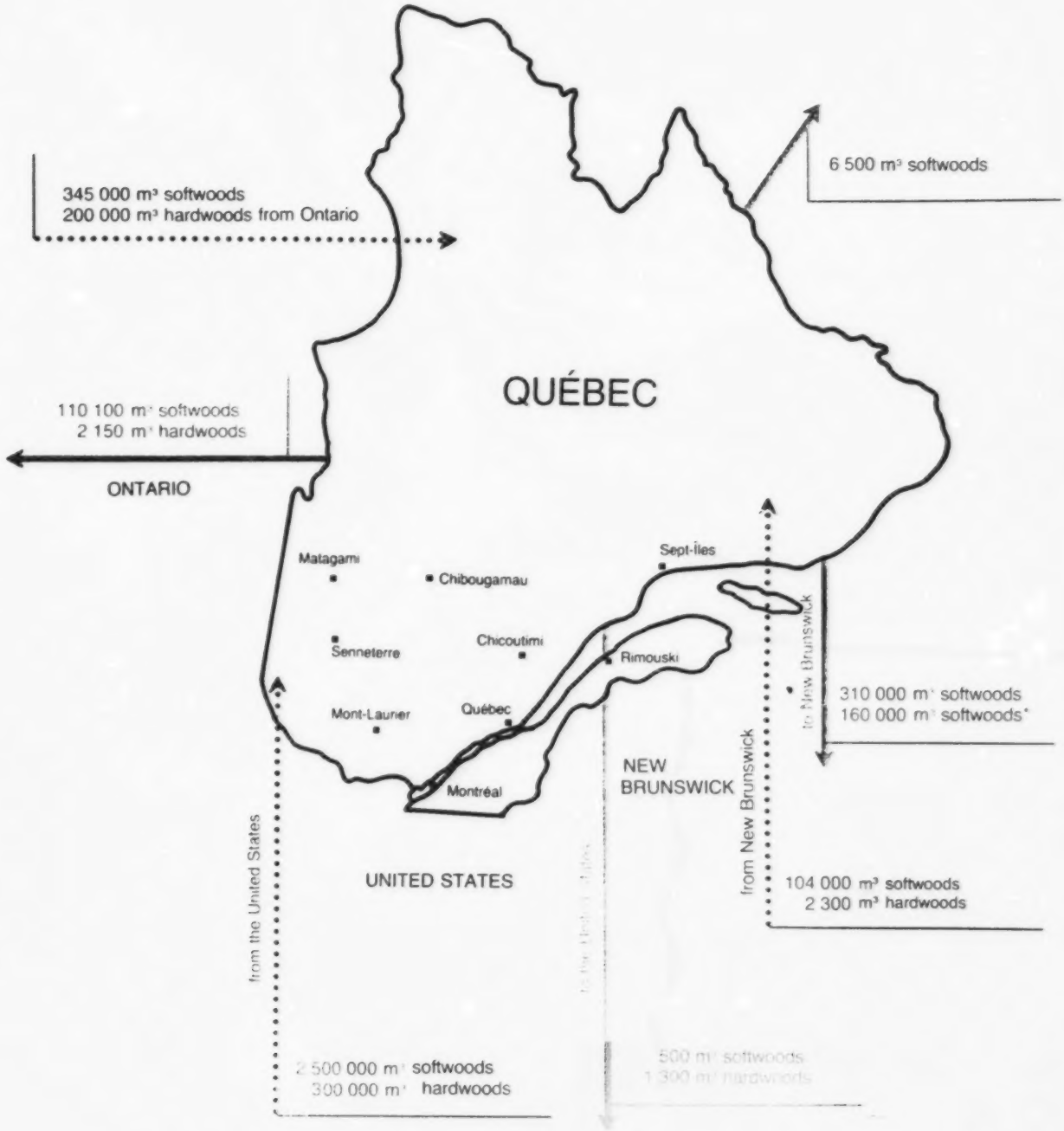
Value Added in Relation to the Number of Hours Worked *(in current dollars)*

	Quebec	British Columbia (Coast and Interior)	Ontario	New Brunswick
	v.a. h = $ h	v.a. h = $ h	v.a. h = $ h	v.a. h = $ h
1980	343 465 = **18.1** 18 882	1 015 953/ = **25.3** 40 123	316 822 = **18.9** 16 692	112 187/ = **15.5** 7 220
1981	391 568 = **21.4** 18 223	861 538/ = **27.6** 31 203	319 182 = **21.3** 14 979	113 199/ = **17.9** 6 292
1982	311 122 = **23.2** 13 413	785 255/ = **30.4** 25 795	283 984 = **25.0** 11 370	82 562/ = **16.8** 4 928
1983	349 914 = **21.8** 16 055	1 138 736/ = **30.0** 38 010	348 408 = **25.9** 13 468	127 631/ = **20.6** 6 208
1984	397 501 = **23.2** 17 117	1 057 975/ = **26.6** 39 779	391 493 = **22.7** 17 283	171 680/ = **22.1** 7 781

Source: Statistics Canada, catalogue 25-201

6 Movement of Roundwood and Chips

6.1 Imports and Exports in 1985 and 1986



* Wood fiber in transit: roundwood imported and sawn in Québec before being exported; or chips produced from imported roundwood and being exported.

6.2 Joint Products Used by the Industry

A) Chips *(Softwood and Hardwood)*

Region	Evolution in Sawmill Production (%)					Evolution in Paper Mill Consumption (%)				
	1980	1981	1982	1983	1984	1980	1981	1982	1983	1984
01 — Bas-Saint-Laurent—Gaspésie	9	8	8	8	8	6	5	7	5	6
02 — Saguenay—Lac-Saint-Jean	29	33	32	34	33	24	27	28	26	24
03 — Québec	10	9	8	11	12	10	11	10	11	12
04 — Trois-Rivières	3	3	3	4	4	24	24	22	21	25
05 — Estrie	2	3	2	3	6	4	4	4	5	6
06 — Montréal	—	2	3	3	3	—	—	—	—	—
07 — Outaouais	3	2	2	2	1	9	8	9	10	10
08 — Abitibi—Témiscamingue	37	36	37	35	29	20	17	19	20	13
09 — Côte-Nord	7	4	5	—	4	3	4	1	2	4
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Compilations based on mill permit renewal applications.

B) Roundwood *(Softwood and Hardwood m³)*

	Private Forests			Public Forests			Total			
	Pulpwood	Sawlogs	Other	Pulpwood	Sawlogs	Other	Pulpwood	Sawlogs	Other	Total
01 — Bas-Saint-Laurent—Gaspésie	1 103 300	478 860	596 465	824 709	1 958 654	67 525	1 928 009	2 437 514	663 990	5 029 513
02 — Saguenay—Lac-Saint-Jean	188 400	—	86 840	1 798 854	5 500 844	87 606	1 987 254	5 500 844	174 446	7 662 544
03 — Québec	1 200 705	126 800	852 580	556 796	772 123	47 666	1 757 501	898 923	900 246	3 556 670
04 — Trois-Rivières	309 915	—	99 910	1 265 436	775 667	131 234	1 575 351	775 667	231 144	2 582 162
05 — Estrie	451 300	87 000	264 060	28 456	26 421	1 125	479 756	113 421	265 185	858 362
06 — Montréal	324 755	12 660	281 980	398 157	495 024	108 309	722 912	507 684	390 289	1 620 885
07 — Outaouais	471 850	51 425	94 710	1 081 970	786 860	32 982	1 553 820	838 285	127 692	2 519 797
08 — Abitibi—Témiscamingue	14 850	79 320	10 375	87 389	4 678 649	363 030	102 239	4 757 969	373 405	5 233 613
09 — Côte-Nord	24 790	—	14 230	1 285 586	803 341	40 593	1 310 376	803 341	54 823	2 168 540
TOTAL	**4 089 865**	**836 065**	**2 301 150**	**7 32 ' 353**	**15 797 583**	**880 070**	**11 417 218**	**16 633 648**	**3 181 220**	**31 232 086**

7 The Wood Industry

7.1 Overview

Wood Processing Mills *(January 1987)*

	01	02	03	04	05	06	07	08	09	Total
Lumber	**208**	**103**	**262**	**101**	**112**	**191**	**95**	**79**	**40**	**1 191**
On a service basis	108	49	111	58	52	76	51	37	18	560
On a commercial basis	100	54	151	43	60	115	44	42	22	631
— Less than 2 000 m³/year	59	20	87	29	38	80	34	21	19	387
— Between 2 000 and 10 000 m³/year	15	12	35	9	13	29	3	2	—	118
— Between 10 000 and 20 000 m³/year	6	4	6	2	4	6	2	1	—	31
— Between 20 000 and 50 000 m³/year	10	6	12	—	3	—	3	2	1	37
— More than 50 000 m³/year	10	12	11	3	2	—	2	16	2	58
Chips	**37**	**35**	**61**	**20**	**23**	**44**	**12**	**29**	**3**	**264**
Main production	1	1	3	4	3	2	1	2	—	17
Secondary production	36	34	58	16	20	42	11	27	3	247
Laths	**24**	**—**	**3**	**—**	**3**	**—**	**—**	**2**	**1**	**33**
Main production	7	—	—	—	—	—	—	—	—	7
Secondary production	17	—	3	—	3	—	—	2	1	26
Shingles[1,2]	**17**	**2**	**23**	**3**	**9**	**10**	**1**	**3**	**—**	**68**
Main production	10	1	15	3	5	5	—	2	—	41
Secondary production	7	1	8	—	4	5	1	1	—	27
Veeners and Plywood[1,2]	**—**	**—**	**4**	**14**	**2**	**7**	**3**	**3**	**—**	**33**
Peeling, slicing	—	—	3	13	2	5	3	3	—	29
Assembling and wood veneer only	—	—	1	1	—	2	—	—	—	4
Sash, Doors and other Millwork[1]	**44**	**36**	**145**	**69**	**34**	**230**	**20**	**11**	**3**	**592**
Hardwood Flooring[1]	**1**	**1**	**6**	**1**	**2**	**1**	**—**	**—**	**—**	**12**
Prefabricated Buildings (frames)[1]	**2**	**6**	**23**	**5**	**1**	**31**	**7**	**3**	**—**	**78**
Wooden Kitchen Cabinets[1]	**6**	**10**	**28**	**19**	**6**	**73**	**3**	**1**	**2**	**148**
Furniture and Furnishings[1]	**1**	**1**	**6**	**3**	**—**	**14**	**1**	**—**	**1**	**27**
Coffins and Caskets[1]	**—**	**—**	**4**	**8**	**1**	**2**	**—**	**—**	**—**	**15**
Treated Wood[1]	**—**	**—**	**1**	**—**	**—**	**1**	**—**	**2**	**—**	**4**
Wooden Handles and Turnery Wood[1]	**—**	**1**	**8**	**4**	**1**	**5**	**—**	**—**	**—**	**19**
Particle Boards[1,2]	**1**	**—**	**2**	**2**	**—**	**5**	**2**	**3**	**—**	**15**
Posts	**—**	**1**	**2**	**—**	**—**	**1**	**1**	**1**	**—**	**6**
Spoolwood	**—**	**—**	**5**	**—**	**5**	**2**	**—**	**—**	**—**	**12**
Main production	—	—	1	—	—	1	—	—	—	2
Secondary production	—	—	4	—	5	1	—	—	—	10
Charcoal	**3**	**—**	**40**	**—**	**—**	**1**	**—**	**1**	**—**	**45**
Integrated mills (including drying)	2	—	3	—	—	—	—	1	—	6
Kilns only	1	—	37	—	—	1	—	—	—	39
Essential Oils	**1**	**1**	**7**	**—**	**5**	**1**	**—**	**1**	**—**	**16**
Firewood (more than 500 m³/year)	**13**	**1**	**19**	**23**	**2**	**45**	**26**	**2**	**1**	**132**
Main production	12	—	12	20	1	42	23	1	1	112
Secondary production	1	1	7	3	1	3	3	1	—	20
Secondary Processing[1] (Sawmill and planing mill products)	**3**	**6**	**22**	**8**	**6**	**15**	**4**	**2**	**—**	**66**
Total Production Units[3]	**361**	**204**	**671**	**280**	**212**	**679**	**175**	**143**	**51**	**2 776**
%	**13**	**7**	**24**	**10**	**8**	**25**	**6**	**5**	**2**	**100**
Actual Number of Mills	**299**	**169**	**554**	**261**	**179**	**627**	**160**	**112**	**47**	**2 408**
%	**12**	**7**	**23**	**11**	**7**	**26**	**7**	**5**	**2**	**100**

(1) Data from the Centre de recherche industrielle du Quebec (CRIQ)

(2) MER compilation

(3) Mills producing more than one category of products are included in each of these categories

Sources: MER and CRIQ

7 The Wood Industry

7.1 Overview (continued)

Economic Indicators by Industry or Major Group of Industries *(Wood Industry, Group 25)*

	Total Number of Employees			Total Salaries and Wages ('000 $)			Value of Shipments ('000 $)			Value Added ('000 $)		
	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984
Shingle and split shake mills (2511)	210	237	225	3 062	3 395	3 606	7 905	8 341	10 206	4 108	4 881	5 964
Sawmills and planing mills (2512)	12 411	14 873	15 549	221 394	282 011	310 622	892 921	1 194 047	1 358 096	354 166	505 632	576 105
Veneer and plywood mills (2520)	1 762	1 796	1 769	26 680	32 690	34 350	134 108	203 726	215 691	49 165	62 542	60 135
Prefabricated buildings (2541)	624	652	638	9 837	10 106	10 888	42 287*	57 305	66 473	16 053	21 344	25 839
Kitchen cabinets (2542)	1 596	2 161	2 220	23 856	33 445	36 873	77 302*	110 716	136 966	36 452	52 817	66 666
Wooden doors and windows (2543)	2 476	2 876	3 114	37 048	50 875	57 795	143 589*	219 906	258 637	60 336	91 769	106 930
Miscellaneous millwork (2549)	1 489	1 638	1 620	23 802	27 101	29 535	82 098*	116 814	121 078	40 233	53 361	60 779
Wooden boxes and pallet factories (2561)	779	708	839	10 998	10 147	13 527	38 254	36 286	50 806	17 142	15 954	23 030
Coffins and caskets industry (2581)	466	495	452	7 714	8 709	7 717	23 748	26 157	24 402	12 771	14 365	12 460
Particle board industry (2592)	426	353	661	9 738	8 727	18 042	48 712	43 386	88 791	17 406	16 185	48 209
Miscellaneous wood industries (2590, except for 2592)	1 354	1 578	1 516	19 407	26 590	28 083	75 403	119 156	143 350	33 994	47 964	59 305
TOTAL	**23 593**	**27 367**	**28 603**	**393 536**	**493 796**	**551 038**	**1 566 327**	**2 135 840**	**2 474 496**	**641 826**	**886 814**	**1 045 422**

* Value of shipments of goods of own manufacture. The value of total shipments is not available for 1982.

Source: Statistics Canada, catalogue 31-203

Capital and Repair Expenditures *(Wood Industry, Group 25)* *($ millions)*

YEAR	Quebec			Canada		
	Capital Expenditures	Repairs	Total	Capital Expenditures	Repairs	Total
1975	61.2	14.9	76.1	266.4	142.5	408.9
1980	68.5	40.1	108.6	469.0	327.1	796.1
1981	61.1	26.6	87.7	447.8	296.7	744.5
1982	125.0	25.6	150.6	320.3	266.1	586.4
1983	83.1	36.9	120.0	288.8	332.0	620.8
1984	62.9	52.3	115.2	334.1	366.6	700.7
1985	99.6	51.4	151.0	327.2	396.7	723.9
1986(p)	77.5	50.1	127.6	430.5	360.1	790.6
1987(e)	69.2	50.3	119.5	544.7	408.3	953.0

(e) Estimate

(p) Preliminary

Source: Investissements privés et publics (BSQ)

Productivity of the Wood Industry

	1980	1981	1982	1983	1984
Productivity of the wood industry (Group 25)	14 110	16 567	15 980	18 916	21 157
Productivity of overall manufacturing industry	22 825	25 604	26 460	29 180	32 560
Relation between sectoral productivity and overall manufacturing productivity	0 618	0 647	0 604	0 648	0 650

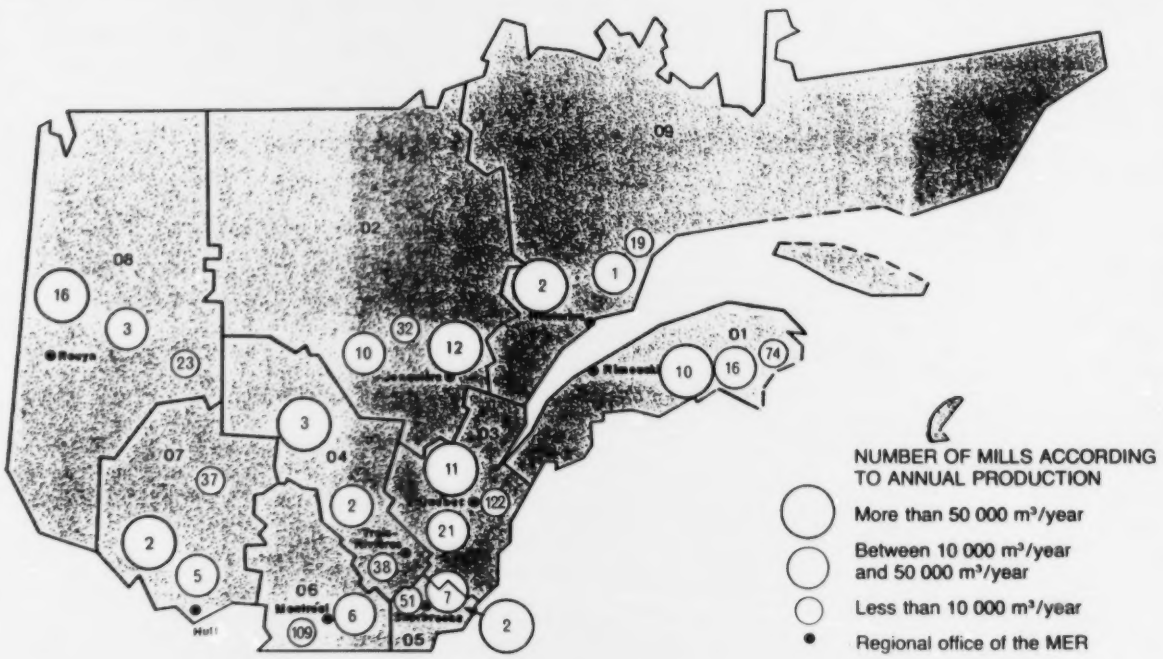
Productivity: Value added by manufacturing activity (in $) per person-hours (in current dollars)

Source: Statistics Canada, catalogue 31-203

7

7.2 The Sawmill Industry

Sawmills Operating on a Commercial Basis



Sources of Wood Used in Sawmills *('000 m³)*

Source	1970	1975	1980	1981	1982	1983	1984	1985
Public forests	5 817	10 129	14 641	15 271	13 024	16 232	15 798	16 463
Private forests	1 266(e)	923(e)	1 519	1 584	1 879	2 365	836	874
Imports	2 510	2 464	3 029	2 400(e)	2 400(e)	2 400(e)	2 400(e)	2 400(e)
TOTAL	**9 593**	**13 156**	**19 189**	**19 255**	**17 303**	**20 997**	**19 034**	**19 737**

(e) Estimated data

Sources: Statistics Canada, catalogue 65-203 and MER (internal compilation)

Lumber Shipments *('000 m³)*

Species	1980	1981	1982	1983	1984	1985	1986(e)
Softwoods	6 960	6 857	6 394	8 105	8 380	9 309	10 400
Hardwoods	578	467	421	381	437	449	400
TOTAL	**7 538**	**7 314**	**6 815**	**8 486**	**8 817**	**9 758**	**10 800**

(e) Estimated data

Sources: Statistics Canada, catalogue 35-002 and MER compilation

Shingles Shipments *(toises*)*

	1980	1981	1982	1983	1984	1985(e)
Shingles	312 425	298 798	300 866	333 529	394 646	450 162

* 1 toise = 9.3 m²

(e) Estimated data

Source: Association des manufacturiers de bois de sciage du Québec (AMBSQ)

7.2 The Sawmill Industry (continued)

Shipments of Related Products *(oven-dry metric tonnes)*

	1982	1983	1984(e)	1985(e)
Chips	3 106 585	3 774 231	3 912 002	4 150 000
Sawdust and shavings	912 675	998 895	1 006 566	800 000
Bark	967 509	1 154 200	1 288 910	1 100 000
TOTAL	**4 986 769**	**5 927 326**	**6 207 478**	**6 050 000**

(e) Estimate

Source: Association des manufacturiers de bois de sciage du Québec (AMBSQ)

Destination of Québec's Softwood Lumber Shipments (%)

	1980	1983	1984	1985(e)
Québec	15	16	18	20
Ontario	19	18	22	24
United States				
• **Northeast**	30	23	21	26
• **North Central**	20	22	20	23
• **South**	4	13	12	2
Overseas	12	8	7	5
TOTAL	**100**	**100**	**100**	**100**

(e) Estimate

Source: Association des manufacturiers de bois de sciage du Québec (AMBSQ)

Conversion Ratio *(lumber/wood fiber)* and Productivity

	Quebec		Ontario		British Columbia		Canada	
	Ratio %	Productivity (m^3/h worked)	Ratio %	Productivity (m^3/h worked)	Ratio %	Productivity (m^3/h worked)	Ratio %	Productivity (m^3/h worked)
1970	37.0	0.19	33.3	0.17	38.3	0.38	37.7	0.29
1975	40.3	0.23	35.9	0.19	43.1	0.39	42.0	0.31
1980	36.5	0.25	29.7	0.24	41.6	0.41	38.7	0.33
1981	39.3	0.27	34.8	0.28	43.1	0.46	41,2	0.37
1982	41.7	0.29	35.8	0.29	42.8	0.51	41.4	0.41
1983	38.4	0.31	35.3	0.31	43.3	0.58	41.0	0.46
1984	39.5	0.32	46.9	0.34	45.4	0.61	44.3	0.47

Sources: Statistics Canada, catalogue 35-204
L'industrie du bois de sciage au Québec (DEI, DGRP, MICT), 1981

Comparative Evolution of Chips and Lumber Shipments

	Québec			Canada		
	Lumber(1) nominal '000 m^3	Chips(1) '000 omt(2)	Chips/Lumber omt m^3	Lumber nominal '000 m^3	Chips '000 omt	Chips/Lumber omt m^3
1970	3 518	994	0.283	25 861	6 483	0.251
1975	4 717	1 830	0.388	25 917	8 801	0.340
1980	7 383	3 643	0.493	40 348	15 899	0.394
1981	7 245	3 530	0.487	39 180	14 216	0.363
1982	6 162	3 107	0.504	35 079	12 829	0.366
1983	7 963	3 424	0.430	44 772	14 962	0.334
1984	8 414	3 766	0.448	46 802	15 071	0.322

(1) Chips and lumber shipments by sawmills
(2) Oven-dry metric tonnes
Source: Statistics Canada, catalogue 35-003

7.2 The Sawmill Industry (continued)

Evolution of Average Gross Volume per Stem of Softwood Harvested in Public Forests *(Spruce, Balsam Fir and Jack Pine)*

	1978-1979 dm^3	1979-1980 dm^3	1980-1981 dm^3	1981-1982 dm^3	1982-1983 dm^3	1983-1984 dm^3	1984-1985 dm^3	1985-1986 dm^3
01 Bas-Saint-Laurent—Gaspesie	165	143	136	148	162	159	144	155
02 Saguenay—Lac Saint-Jean	159	151	145	148	146	142	136	145
03 Québec	151	145	141	139	132	161	146	144
04 Trois-Rivières	190	203	205	169	193	167	176	185
05 Estrie	—	—	—	—	—	—	—	—
06 Montréal	241	257	129	211	185	184	176	198
07 Outaouais	203	211	160	157	232	157	278	273
08 Abitibi—Témiscamingue	169	161	154	147	145	140	133	133
09 Côte-Nord	199	188	195	194	192	147	174	189
Weighted Average	**164**	**158**	**153**	**150**	**149**	**143**	**138**	**143**

Note: These figures are taken from logging sites where wood is measured by length only, and therefore exclude wood measured in units or in mass volume.

7 The Wood Industry

7.3 Economic Indicators

Evolution of the Economic Indicators for Sawmill and Planing Mill Products*

	Total Number of Employees	Wages 000 $	Value of Shipments 000 $	Value Added 000 $
1970	9 039	42 501	176 225	73 211
1975	11 371	102 965	377 785	180 023
1980	16 140	252 133	973 290	449 854
1981	15 477	257 470	1 003 660	433 614
1982	12 411	221 394	892 921	354 166
1983	14 873	282 011	1 194 047	505 632
1984	15 549	310 622	1 358 096	576 105

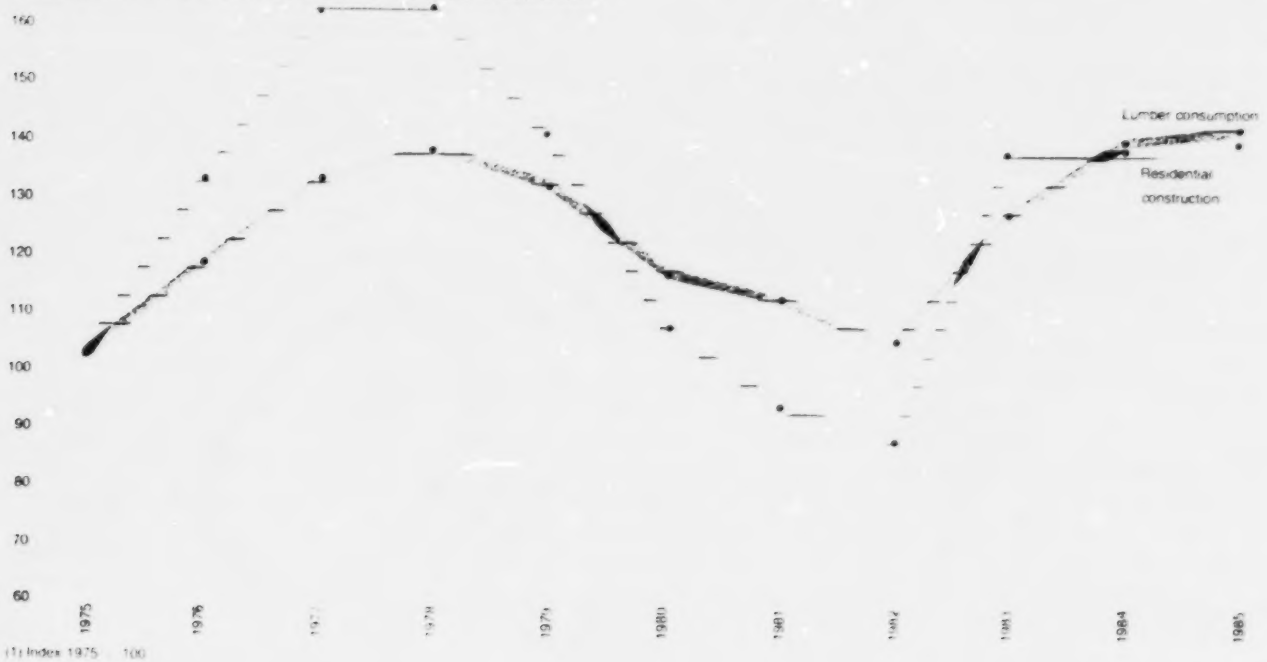
* Sawmills and planing mills represent only part of Group 251 (Wood industries).

Source: Statistics Canada, catalogue 31-203.

7

7.3 Economic Indicators (continued)

Comparative Evolution of Lumber Consumption and Residential Construction in North America



(1) Index 1975 = 100

Profitability Ratio* *(Sawmills and Planing Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	2.8	3.7	3.5	3.3
1981	(1.0)	1.3	(1.0)	(0.8)
1982	(1.2)	(2.1)	(6.8)	(4.8)
1983	3.6	3.2	1.6	1.9
1984	3.7	2.7	0.4	1.2(e)
Average	**1.7**	**1.4**	**0.7**	**0.4**

* This ratio is calculated by dividing net profit by total revenues.

(e) Estimate

Financial Returns Ratio* *(Sawmills and Planing Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	14.2	18.2	15.0	15.1
1981	11.4	14.6	11.3	11.4
1982	12.4	11.4	6.6	8.4
1983	17.3	17.0	13.8	14.7
1984	16.0	12.5	11.8	12.9(e)
Average	**14.5**	**14.7**	**11.9**	**13.2**

* This ratio is calculated by dividing gross profits by product sales.

(e) Estimate

7 The Wood Industry

7.4 The Veneer and Plywood Industry

Working Capital Ratio* *(Sawmills and Planing Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	1.4	1.4	1.5	1.5
1981	1.3	1.5	1.4	1.4
1982	1.4	1.5	1.3	1.4
1983	1.9	1.9	1.4	1.4
1984	1.7	1.4	1.3	1.4(e)
Average	**1.5**	**1.5**	**1.4**	**1.4**

* This ratio is calculated by dividing short-term assets by short-term liabilities.

(e) Estimate

Financial Structure Ratio* *(Sawmills and Planing Mills)*

	Quebec Debt:Equity	Ontario Debt:Equity	British Columbia Debt:Equity	Canada Debt:Equity
1980	31:69	24:76	45:55	40:60
1981	37:63	31:69	55:45	49:51
1982	45:55	30:70	59:61	53:47
1983	43:57	36:64	60:40	53:47
1984	39:61	43:57	61:39	55:45(e)
Average	**40:60**	**33:67**	**66:34**	**50:50**

* This ratio is the proportion of long-term debts to equity.

(e) Estimate

Note: The financial data contained in the four preceding tables are distributed according to the province in which the industry's head office is located.

Source: Statistics Canada, catalogue 61-207

7 The Wood Industry

7.4 The Veneer and Plywood Industry

Hardwood Veneer and Plywood* Shipments

	Veneer			Plywood			Total		
	1982	1983	1984	1982	1983	1984	1982	1983	1984
Québec ('000 m²)	51 377	77 461	80 403	6 618	10 281	9 543	57 995	87 742	89 946
Ontario ('000 m²)	49 069	60 686	58 081	16 474	18 554	19 024	65 543	79 240	77 105
Canada ('000 m²)	101 076	138 931	139 258	25 593	31 557	30 965	126 669	170 488	170 223
Québec/Canada (%)	50.8	55.8	57.7	25.9	32.6	30.8	45.8	51.5	52.8
Ontario/Canada (%)	48.5	43.7	41.7	64.4	58.8	61.4	51.7	46.5	45.3

* With respect to boards, veneer and plywood, quantities are given in surface measurements (m²), for a standard thickness of 6 mm (¼ inch).

Sources: Statistics Canada, catalogues 35-206 and 31-211
Statistics Canada, special compilation by province

7

7.4 The Veneer and Plywood Industry (continued)

Evolution of the Economic Indicators for the Veneer and Plywood Industry

	Total number of employees	Total salaries and wages ('000 $)	Value of shipments ('000 $)	Value added ('000 $)
1970	2 362	11 335	51 115	17 762
1975	2 491	21 167	85 602	31 167
1980	1 991	27 736	142 253	53 832
1981	1 715	24 761	136 612	50 654
1982	1 762	26 680	134 108	49 165
1983	1 796	32 690	203 726	62 542
1984	1 769	34 350	215 691	60 135

Source: Statistics Canada, catalogue 31-203

7 The Wood Industry

7.5 Miscellaneous

The Reconstituted Board Industry in 1986

Products	Number of mills	Production capacity (m^3 year)	Total number of employees
Waferboard	3	385 000	300
Particle board	3	545 000	700
Low-density board	3	450 000	460
Total	**9**	**1 380 000**	**1 460**

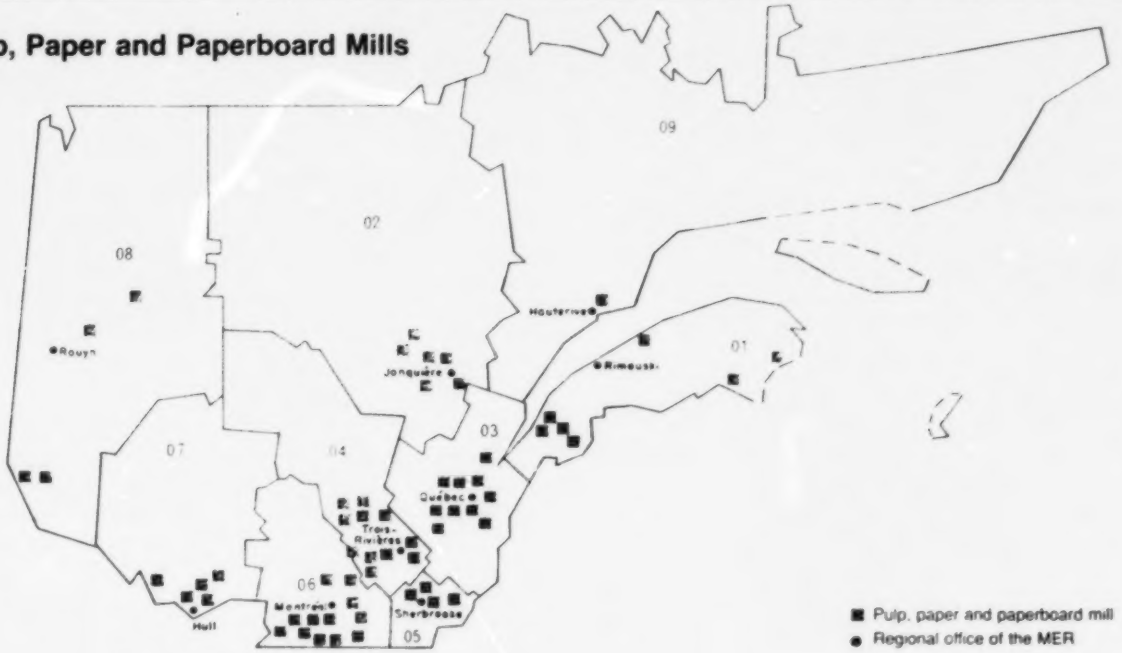
The Charcoal Industry in 1985

Number number of mills	Total number of employees	Production capacity (m t)			Production (m t)			Value of shipments ('000 $)
		Charcoal	Briquets	Total	Charcoal	Briquets	Total	
8	60	14 000	11 500	25 500	7 700	2 200	9 900	3 880

8 The Pulp and Paper Industry

8.1 Production Capacity

Pulp, Paper and Paperboard Mills



Pulp and Paper Mills *(January 1987)*

	The MER's Administrative Regions									
	01	02	03	04	05	06	07	08	09	Total
Pulp and Paper Mills	**7**	**6**	**10**	**22**	**4**	**12**	**5**	**4**	**1**	**80**
% by region	11.7	10.0	16.7	18.3	6.7	20.0	8.3	6.7	1.6	100
Using roundwood and chips	7	6	5	8	3	1	4	4	1	39
Using purchased or recycled pulp, or fibers other than wood	2	3	5	10	2	12	2	—	—	36
Number of Producers by Product*	**7**	**7**	**14**	**15**	**6**	**12**	**6**	**4**	**1**	**72**
Newsprint and specialty papers	2	4	5	5	1	—	2	1	1	21
Fine and special papers	—	—	2	—	12	4	1	—	—	8
Tissue paper	—	—	1	2	1	3	1	—	—	8
Commercial pulp	2	2	2	1	1	—	2	3	—	13
Kraft paper and paperboard	1	—	—	2	1	—	—	—	—	4
Paperboard	2	1	1	4	2	3	—	—	—	12
Building materials	—	—	3	1	—	2	—	—	—	6

* One plant may manufacture several different products

Annual Production Capacity, by Product *('000 t)*

	The MER's Administrative Regions									
	01	02	03	04	05	06	07	08	09	Total
Newspaper and specialty papers	390	998	1 050	1 355	196	—	734	166	402	5 291
Fine and special papers	—	—	23	—	98	147	98	—	—	366
Tissue paper	—	—	11	48	13	107	72	—	—	251
Commercial pulp	23	311	48	163	60	—	317	490	—	1 412
Kraft paper and paperboard	200	—	—	344	80	—	—	—	—	624
Paperboard	175	40	30	97	30	149	—	—	—	521
Subtotal	**788**	**1 349**	**1 162**	**2 007**	**477**	**403**	**1 221**	**656**	**402**	**8 465**
% by region	9.3	16.0	13.7	23.7	5.6	4.8	14.4	7.8	4.7	100
Building materials	—	—	127	13	—	53	—	—	—	193
Total Pulp and Paper	**788**	**1 349**	**1 289**	**2 020**	**477**	**456**	**1 221**	**656**	**402**	**8 658**

8

8.2 Production

Sources of Wood Fiber for the Pulp and Paper Industry *('000 m³)*

	1980	1983	1984	1985	1986	1987(p)	%
Pulpwood harvested on public forest lands	10.4	8.6	9.8	9.6	9.2	10.2	35
Purchased wood	4.2	4.0	4.0	3.6	3.6	5.2	18
Sawmill residues (chips and others)	10.1	12.4	11.9	13.5	14.6	13.7	47
Total	**24.7**	**25.0**	**25.7**	**26.7**	**27.4**	**29.1**	**100**
Total in thousands of cunits*	(8.76)	(8.8)	(9.1)	(9.43)	(9.48)	(8.51)	

(p) Predicted figures

* cunits = 100 solid cubic feet = 2.831 cubic meters

Raw Materials Used in Pulp and Paper Mills

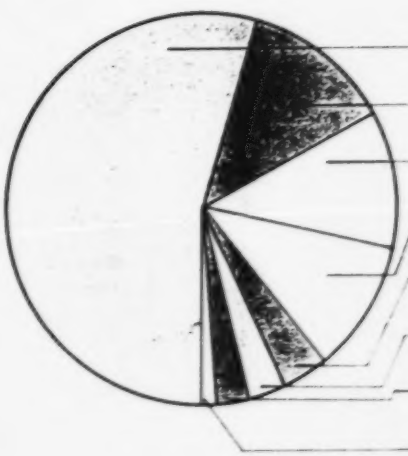
Year	Roundwood		Sawmill residues		Secondary fibers		Total
	'000 t	%	'000 t	%	'000 t	%	'000 t
1984[e]	5 106	54.0	4 183	41.0	220	5.0	9 509
1985[e]	4 880	49.4	4 545	46.0	455	4.6	9 880
1986[p]	4 740	47.0	4 850	48.0	550	5.4	10 140
1987[p]	5 720	53.0	4 540	42.0	540	5.0	10 800

(e) Estimate

(p) Preliminary

Source: MER, Direction du développement industriel

Distribution of Production, by Product



Production (%)			Products	Production (1000 t)		
1984	1985	1986		1984	1985	1986
56.0	54.8	52.8	Newsprint	4 068	3 984	4 143
12.9	12.3	12.3	Paperboard	937	896	962
9.9	11.3	12.1	Special printing papers	721	826	953
10.7	10.3	11.6	Pulp shipped outside Quebec	779	748	912
3.5	3.7	3.6	Fine papers	256	267	286
3.0	3.3	3.2	Sanitary papers	218	240	248
2.6	2.7	2.7	Construction papers and paperboards	186	200	215
1.4	1.6	1.6	Wrapping papers	103	115	126
100	100	100		7 268	7 276	7 845

Source: Association des industries forestières du Québec (AIFQ)

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8.2 Production (continued)

Evolution of Production *('000 t)*

	1980	1981	1982	1983	1984	1985	1986
Newsprint	4 006	4 370	3 957	4 007	4 068	3 984	4 143
Special printing papers	309	291	413	487	721	826	953
Fine papers	220	196	230	265	256	267	286
Sanitary papers	204	194	190	209	218	240	248
Wrapping papers	143	146	128	128	103	115	126
Paperboards	955	951	748	844	937	896	962
Construction papers and paperboards	171	175	178	200	186	200	215
TOTAL papers and paperboards	**6 008**	**6 323**	**5 844**	**6 140**	**6 489**	**6 528**	**6 933**

Source: Association des industries forestières du Québec (AIFQ)

Québec's Pulp Production *('000 t)*

	1984	1985	1986*	%
Mechanical pulp	3 530	3 563	3 769	53
Sulphite pulp	1 075	1 070	1 061	15
Sulphate pulp (kraft)	1 644	1 663	1 850	26
Others	358	350	370	5
Total	**6 607**	**6 646**	**7 050**	**100**

(e) Estimate

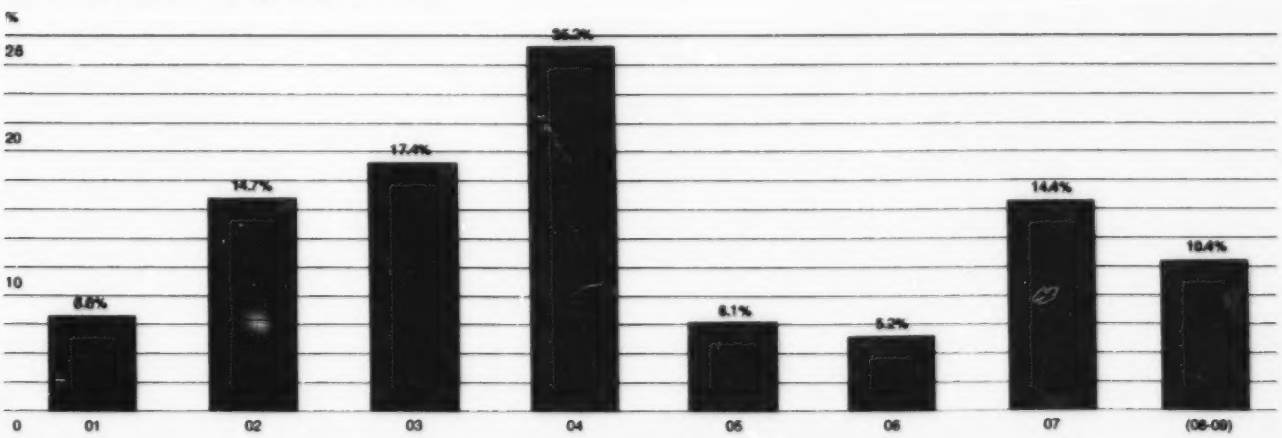
Source: Association des industries forestières du Québec (AIFQ)

Québec's Share in World Production of Paper and Paperboard

	Newsprint '000 t				Other papers and paperboards '000 t				Total '000 t			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Québec	3 835	3 881	4 068	3 984	2 079	2 306	2 421	2 544	5 914	6 187	6 489	6 528
Canada	8 109	8 486	9 013	8 988	4 322	4 603	5 193	5 457	12 431	13 089	14 206	14 445
World	25 221	25 764	27 871	28 418	141 308	151 518	161 658	164 757	166 529	177 282	189 628	193 076
Québec/Canada	47.3	45.7	45.1	44.3	48.1	50.1	46.6	46.6	47.6	47.3	45.7	45.2
Québec/World	15.2	15.1	14.6	14.0	1.5	1.5	1.5	1.5	3.6	3.5	3.4	3.4

Sources: Association des industries forestières du Québec (AIFQ)
Canadian Pulp and Paper Association (CPPA)
Pulp and Paper International, Vol. 28, No. 8, August 1986.

Pulp and Paper Production, by the MER Administrative Regions in 1984



THE MER'S ADMINISTRATIVE REGIONS

Source: Association des industries forestières du Québec (AIFQ)

8

8.3 Economic Indicators

Evolution of the Economic Indicators for the Pulp and Paper Industry* *(Group 271)*[1]

Year	Total number of employees	Total salaries and wages 000 $	Value of shipments 000 $	Value added 000 $
1970	31 430	268 195	1 075 803	475 499
1975	31 946	404 478	1 843 936	824 621
1980	31 421	686 250	3 791 710	1 765 768
1981	32 824	827 127	4 368 958	2 016 441
1982	31 404	864 478	4 176 642	1 738 654
1983	30 663	925 982	4 228 412	1 638 529
1984	30 628	979 991	4 920 649	2 105 291

(1) The pulp and paper industry represents only part of the industries in Group 27 (paper and allied industries).

Source: Statistics Canada, catalogue 31-203

Pulp and Paper Mills Productivity*

	1980	1981	1982	1983	1984
Productivity of the pulp and paper industry (Group 271)	35.18	37.55	35.45	33.66	43.40
Productivity of overall manufacturing industry	22.82	25.60	26.46	29.18	32.56
Relation between sectoral productivity and overall manufacturing productivity	1.54	1.47	1.34	1.15	1.33

* Productivity: Value added divided by person-hours paid (in current dollars).

Source: Statistics Canada, catalogue 31-203

Modernization Program Grants Paid *('000 000 $)*

	Quebec	Federal	Total
1979-1980	4.9*		4.9
1980-1981	7.1	9.1	16.2
1981-1982	15.8	20.3	36.1
1982-1983	10.3	13.3	23.6
1983-1984	18.1	23.3	41.4
1984-1985	31.0	39.9	70.9
1985-1986	13.5	17.4	30.9
1986-1987	3.4	4.3	7.7
Total	**104.1**	**127.6**	**231.7**

* Retroactivity

Source: Bureau de la statistique du Québec (BSQ)

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8.3 Economic Indicators (continued)

Significance of Capital and Repair Expenditures

		Capital expenditures ('000 $)	Repairs ('000 $)	TOTAL
Total for manufacturing industry (101-399)	1975	1 373 100	574 300	1 947 400
	1980	2 189 600	1 027 300	3 216 900
	1981	2 272 400	1 104 700	3 377 100
	1982	2 159 800	1 088 200	3 248 000
	1983	2 087 800	1 154 900	3 242 700
	1984	2 751 000	1 264 700	4 015 700
	1985p	3 281 700	1 346 500	4 628 200
	1986e	3 840 700	1 406 900	5 247 600
Pulp and paper industry (271)	1975	174 695	96 899	271 594
	1980	331 443	189 986	521 429
	1981	453 478	227 493	680 980
	1982	445 874	238 565	684 439
	1983	372 302	232 783	605 085
	1984	424 234	255 052	679 286
	1985p	627 689	274 428	902 117
	1986e	1 085 237	315 289	1 400 526
Significance of pulp and paper industry in relation to manufacturing industry as a whole	1975	12.7%	16.9%	13.9%
	1980	15.1%	18.5%	16.2%
	1981	20.0%	20.6%	20.2%
	1982	20.6%	21.9%	21.1%
	1983	17.8%	20.2%	18.7%
	1984	15.4%	20.2%	16.9%
	1985p	19.1%	20.4%	19.5%
	1986e	28.3%	22.4%	26.7%

(p) Preliminary data (e) Estimated data Source: Investissements privés et publics au Québec

Profitability Ratio* *(Pulp and Paper Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	11.1	12.4	6.6	10.6
1981	6.4	19.1	1.2	9.3
1982	2.4	8.6	(10.8)	(0.1)
1983	1.6	2.1	(8.3)	(0.5)
1984	3.6	5.9	1.6	3.3e
Average	**4.6**	**10.4**	**(2.0)**	**4.5**

* This ratio is calculated by dividing net profits by total revenues.
(e) Estimate

Working Capital Ratio* *(Sawmills and Planing Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	2.3	1.9	2.1	2.2
1981	2.1	1.9	1.6	1.9
1982	2.0	2.0	1.1	1.7
1983	1.7	2.0	0.7	1.4
1984	1.7	2.0	1.5	1.7e
Average	**1.9**	**1.9**	**1.3**	**1.7**

* This ratio is calculated by dividing short-term assets by short-term liabilities.
(e) Estimate

Financial Returns Ratio* *(Sawmills and Planing Mills)*

	Quebec (%)	Ontario (%)	British Columbia (%)	Canada (%)
1980	25.2	29.8	20.9	24.0
1981	19.4	25.6	10.9	19.4
1982	16.4	12.7	2.0	12.5
1983	15.2	12.8	9.3	11.9
1984	18.0	15.0	13.1	13.7e
Average	**18.4**	**18.3**	**10.5**	**16.1**

* This ratio is calculated by dividing gross profits by product sales.
(e) Estimate

Financial Structure Ratio* *(Sawmills and Planing Mills)*

	Quebec Debt: Equity	Ontario Debt: Equity	British Columbia Debt: Equity	Canada Debt: Equity
1980	28:72	27:73	40:60	27:73
1981	43:57	25:75	44:56	38:62
1982	40:60	31:69	49:51	43:57
1983	32:68	33:67	67:33	41:59
1984	34:66	31:69	44:56	37:63e
Average	**37:63**	**29:71**	**47:53**	**38:62**

* This ratio is the proportion of long-term debts to equity.
(e) Estimate

Note: The financial data contained in the four preceding tables are distributed according to the province in which the industry's head office is located.

Source: Statistics Canada, offprint of catalogue 61-207

8

8.4 Shipments

Destination of Québec Pulp and Paper Shipments in 1984

	Quebec		Other Provinces		United States		Other Countries		Total	
	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%
Newsprint	244	5.9	337	8.2	3 085	75.2	438	10.7	4 104	100
Commercial pulp	314	28.7	213	19.5	413	37.8	153	14.0	1 093	100
Other papers and paperboard	628	26.8	877	37.5	759	32.4	77	3.3	2 341	100
Total	**1 186**	**15.7**	**1 427**	**18.9**	**4 257**	**56.5**	**668**	**8.9**	**7 538***	**100**

* Including pulp shipped and reprocessed in Quebec (314 000 mt)

Destination of Québec Pulp and Paper Shipments in 1985

	Quebec		Other Provinces		United States		Other Countries		Total	
	'000 t	%	'000 t	%	'000 t	%	'000 t	%	'000 t	%
Newsprint	231	5.8	320	8.0	3 062	76.8	373	9.4	3 986	100
Commercial Pulp	306	29.0	210	19.9	380	36.1	158	15.0	1 054	100
Other papers and paperboard	649	26.4	911	37.1	822	33.4	76	3.1	2 458	100
Total	**1 186**	**15.8**	**1 441**	**19.2**	**4 264**	**56.9**	**607**	**8.1**	**7 498***	**100**

* Including pulp shipped and reprocessed in Quebec (314 000 mt)

Source: Association des industries forestieres du Quebec (AIFQ)

Significance of Exports

	1980	1981	1982	1983	1984	1985
Pulp and paper exports ('000 000 $)	2 392	2 785	2 645	2 529	3 086	3 162
Québec's total exports ('000 000 $)	14 886	15 065	14 400	14 961	17 373	18 628
Relative significance of pulp and paper (%)	16.1	18.5	18.4	16.9	17.8	17.0

Source: Bureau de la statistique du Quebec (BSQ)

Québec's Share in the U.S. Newsprint Market

	1975	1980	1981	1982	1983	1984	1985
Québec shipments ('000 t)	2 544	2 825	3 010	2 832	2 989	3 085	3 062
U.S. consumption ('000 t)	8 325	10 088	10 164	10 108	10 589	11 431	11 587
Québec shipments/ U.S. consumption (%)	30.6	28.0	29.6	28.0	28.2	27.0	26.4

Sources: Association des industries forestieres du Québec (AIFQ)
Canadian Pulp and Paper Association (CPPA)

World Newsprint Figures

	1984					1985				
	Production	%	Imports	Exports	Apparent consumption	Production	%	Imports	Exports	Apparent consumption
Québec	4 021	14.7	—	3 475	280	3 984	14.3	—	3 435	275
Other provinces	4 994	18.3	—	4 490	770	5 004	17.9	—	4 523	755
United States	5 030	18.4	6 800	260	11 570	4 924	17.7	7 000	279	11 675
Scandinavia	3 875	14.2	—	3 127	748	3 982	14.3	—	3 309	673
Common Market	1 837	6.7	3 257	292	4 082	1 919	6.9	3 307	348	4 878
Other Western European countries	430	1.6	61	147	344	472	1.7	81	184	369
USSR	1 400	5.1	7	350	1 057	1 575	5.6	6	370	1 211
Other Eastern European countries	396	1.4	231	52	575	2 017	7.2	244	435	1 826
Latin America	695	2.5	621	135	1 181	858	3.0	553	135	1 276
Asia, Africa and Oceania	4 666	17.1	1 742	416	5 992	4 728	17.0	1 909	394	6 243
World Total	**27 344**	**100**	**12 719**	**12 744**	**27 319**	**27 888**	**100**	**13 094**	**13 042**	**27 940**

Source: Association des industries forestieres du Quebec (AIFQ)

9 The Forest Sector in Québec's Economy

9.1 Economic Indicators

Economic Indicators for the Forest Sector

	Total Number of Employees			Total Salaries and Wages ('000$)			Value of Shipments ('000$)			Value Added to Overall Operations ('000$)		
	1982	1983	1984	1982	1983	1984	1982	1983	1984	1982	1983	1984
A. Logging	8 994	9 881	10 729	204 828	230 564	243 245	777 350	850 412	937 232	317 817	356 771	47 101
B. Wood industry (Group 25)	23 593	27 367	28 603	393 536	493 796	551 038	1 566 327	2 135 840	2 474 496	641 826	886 814	1 045 422
C. Paper and related industries (Group 27)	43 144	40 829	41 107	1 107 687	1 156 073	1 228 781	5 393 093	5 433 706	6 192 731	2 176 011	2 080 101	2 570 317
D. Total manufacturing activity	482 337	474 820	484 883	9 915 886	10 378 168	11 178 303	54 293 105	56 648 879	61 537 263	19 520 069	21 465 289	24 507 163
E. Total economic activity	2 585 000	2 642 000	2 722 000	50 091 000	52 282 000	55 706 000	na	na	na	84 009 000	90 432 000	97 631 000
Wood industry / total manufacturing activity (B./D)*	4.9%	5.8%	5.9%	4.0%	4.8%	4.9%	0.0%	3.8%	4.0%	3.3%	4.1%	4.3%
Paper and related industries / total manufacturing activity (C/D)*	8.9%	8.6%	8.5%	11.2%	11.1%	11.0%	9.9%	9.6%	10.1%	11.1%	9.7%	10.5%
Forest sector / total economic activity (A+B+C)/E)*	2.9%	3.0%	3.0%	3.4%	3.6%	3.6%	na	na	na	3.7%	3.7%	3.8%
Manufacturing activity / total economic activity (D/E)*	18.7%	18.0%	17.8%	19.8%	19.9%	20.1%	na	na	na	23.7%	23.2%	25.1%

* Relation between above-mentioned items

na: not available

Source: Statistics Canada, catalogue 31-203

Export of Québec's Forest Products *(1983)*

	Value of Exports ('000$)			
	1982	1983	1984	1985
Roundwood	8 331	16 352	16 580	16 580
Products of other wood industries	680 184	870 603	921 543	919 695
Pulp and paper industry	2 645 066	2 529 379	3 086 449	3 162 478
Products of the paper processing industry	21 769	30 891	44 275	47 743
Waste paper and wood residues	17 627	14 636	21 831	26 189
Total export of Québec's forest products	**3 372 977**	**3 461 861**	**4 090 678**	**4 172 685**

Source: Bureau de la statistique du Quebec

Forest Products Exported from Québec's Major Ports 1985-1986 *(mt)*

Products	Ports									
	Montreal (Pv)		Quebec (Pv)		Trois-Rivieres (Pv)		Baie-Comeau (Pv + Fd)		Matane (Fd)	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
Logs	24 803	37 929	4 761 Pr	—	—	—	—	—	—	—
Lumber	101 289	108 538	53 578	1 543	98	68	20 776	33 368	1 241	—
Chips	—	—	—	—	—	—	13 317	—	3 360	17 202
Veneer and plywood	20 567	20 866	—	—	1 050	—	—	—	—	—
Other wood products*	3 992	4 343	—	—	—	—	—	—	—	—
Wood pulp	97 236	136 497	338	2 337	—	—	—	—	—	—
Newsprint	18 521	35 857	90 465	93 228	50 932	87 467	126 144	141 485	—	—
Other paper and paperboard	30 640	51 219	1 645	—	14 008	20 945	—	—	—	—
Total	**297 048**	**395 249**	**146 026 (150 787)**	**97 108**	**66 288**	**108 480**	**160 237**	**174 853**	**4 601**	**17 302**

* Not mentioned elsewhere

Pv: Provincial port

Pr: Private port

Fd: Federal port

Sources: Transport Canada, Port de Montreal, Port de Québec, and Port de Trois-Rivières

9.1 Economic Indicators (continued)

Forest Products Exported from Québec's Major Ports 1985-1986 *(mt) (continued)*

Products	Ports									
	Gros Cacouna (Fd)		Carleton (Fd)		Chandler (Fd)		Pointe-au-Pic (Fd)		Port-Alfred (Pr)	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
Logs	—	543	—	—	—	—	—	—	—	—
Lumber	23 855	105 441	16 872	23 525	—	—	—	—	—	—
Chips	—	—	—	—	—	—	—	—	—	—
Veneer and plywood	—	—	—	—	—	—	—	—	—	—
Other wood products*	—	—	—	—	—	—	—	—	—	—
Wood pulp	—	—	—	—	—	—	—	—	—	—
Newsprint	5 826	32 372	—	—	53 752	43 054	—	10 578	100 567	149 115
Other paper and paperboard	—	—	—	—	—	—	—	—	—	—
Total	**29 681**	**138 356**	**16 872**	**23 525**	**53 752**	**43 054**	**—**	**10 578**	**100 567**	**149 115**

* Not mentioned elsewhere

9 The Forest Sector In Québec's Economy

9.2 The MER's Expenditures in, and Revenues from the Forest Sector

Gross Expenditures of the MER's Forest Sector *('000 $)*

Program Aspect[1]	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986[e]
1. Knowledge of the forest	**5 942**	**6 724**	**7 151**	**7 378**	**7 371**	**8 394**
a. Research	2 600	2 813	2 826	3 032	3 124	3 175
b. Basic inventory	3 342	3 911	4 325	4 346	4 247	5 129
2. Forest improvement	**33 145**	**40 074**	**51 500**	**67 581**	**90 397**	**104 844**
a. Management of public forests	19 178	24 532	31 846	46 205	69 647	79 603
b. Management of private forests	13 967	15 542	19 654	21 376	20 750	25 241
3. Forest protection	**17 142**	**23 347**	**29 258**	**38 154**	**30 792**	**34 277**
a. Fire prevention and control	10 296	13 092	13 512	18 964	10 943	10 042
b. Insect prevention and control	4 360	7 421	12 958	16 969	17 510	21 883
c. Conservation education	2 486	2 834	2 788	2 221	2 339	2 352
4. Utilization of forests	**37 259**	**43 063**	**43 157**	**38 303**	**33 000**	**30 025**
a. Planning	8 078	8 258	11 991	9 349	8 650	9 316
b. Control	7 970	9 127	8 974	8 965	9 217	9 315
c. Forest roads	21 211	25 678	22 192	19 989	15 133	11 394
5. Internal management and support[2]	**10 173**	**12 190**	**12 315**	**13 770**	**14 384**	**23 283**
6. Forestry financing	**2 368**	**3 520**	**3 499**	**3 224**	**3 417**	**3 703**
7. Development of the forest industry	**19 310**	**48 001**	**19 101**	**26 539**	**49 118**	**34 982**
Total MER expenditures in the forest sector	**125 339**	**176 919**	**165 981**	**194 949**	**228 479**	**239 508**
Total expenditures of the economic mission	**2 018 410**	**2 213 286**	**2 414 176**	**2 728 059**	**2 982 148**	**3 243 703**
Forest sector/economic mission	**6.2%**	**8.0%**	**6.9%**	**7.1%**	**7.7%**	**7.4%**

(e) Estimate

(1) Historical data are distributed according to the 1985-1986 budgetary system.

(2) The forest sector's share of the Ministry's total internal management and support expenditures (estimate)

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9.2 The MER's Expenditures in, and Revenues from the Forest Sector (continued)

Revenues of the MER's Forest Sector *('000 $)*

	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986(e)
Dues on authorized logging operations						
• Leased territories	10 026	22 385	10 269	13 888	20 739	19 086
• Domanial forests	10 186	12 599	11 583	12 961	18 437	18 896
• Other tenures	2 428	1 981	429	416	1 207	1 583
Dues on surplus volumes						
• Leased territories	*	16	—	5	7	—
• Domanial forests	*	34	13	4	11	33
• Other tenures	*	106	- 38	32	—	- 25
Wood scaler permits	5	4	3	- 3	3	3
Export permits	6	11	10	—	5	1
Wood sales	187	128	187	279	189	53
Rental of air tankers	622	1 243	799	2 337	—	—
Rental of leased territories	1 296	2 432	3 185	1 860	2 284	1 982
Rental of maple tree groves	23	30	34	31	29	30
Fire prevention services	1 138	1 718	1 511	357	3	2
Forest fire extinction	491	538	538	104	—	2
Services related to the prevention of, and fight against forest fires	486	1 117	622	1 493	1 404	1 556
Wood scaling services	49	49	39	17	26	38
Construction of forest roads	162	- 1	—	—	1	—
Forest inventories and management	810	1 033	907	1 260	1 231	1 216
Interest on the payment of forest dues	753	1 399	1 302	1 573	1 531	683
Fines and confiscations	- 453	999	236	204	286	419
Total	**28 215**	**47 831**	**31 629**	**36 818**	**47 393**	**45 558**

(e) Estimate

* Included in dues on authorized logging opereations

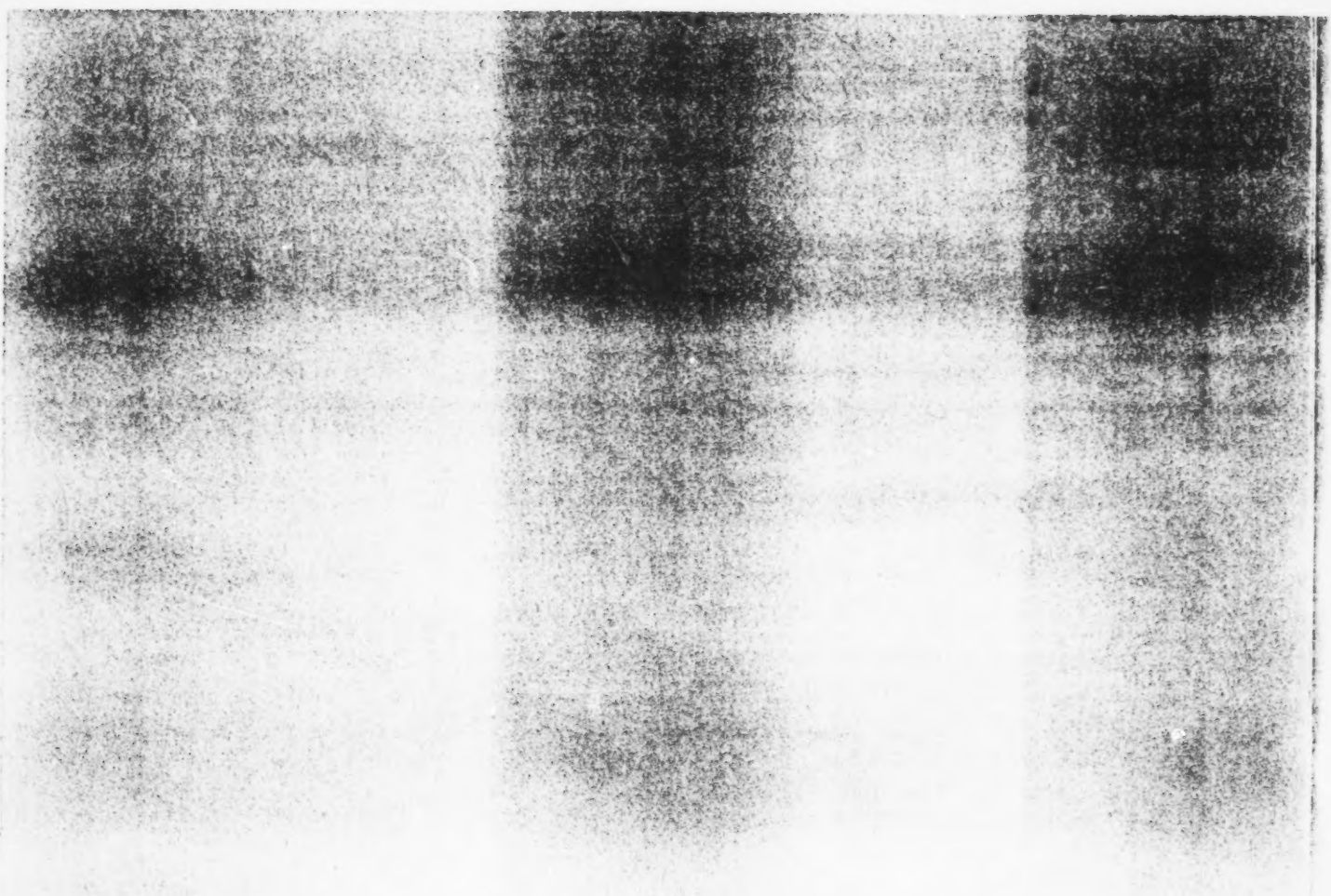
Conversion Factors

1 cord of wood = 85 solid cubit feet = 2.40 cubic meters
1 cunit = 100 solid cubic feet = 2.831 cubic meters
1 000 board feet measure (bfm) = 2.36 cubic meters (net value)
1 cubic meter = 423.7 bfm = 35.5 cubic feet = 0.353 cunit
1 metric tonne = 1 000 kilograms = 1.102 short ton = 2 205 pounds
1 square kilometer = 0,386 square mile

Sales Price Index for the Forest Industry

Year	Softwood Lumber Index (Quebec)	Veneer and Plywood Index (Canada)	Paper and Related Products Index (Canada)
1982	96.1	91.8	103.5
1983	118.5	101.5	100.1
1984	113.4	97.1	111.5
1985	117.5	100.5	112.9
1986	126.9	116.4	117.5

Source: Statistics Canada, catalogue 62-011



Gouvernement du Québec
Ministère de l'Énergie et des Ressources